

JULY 1952

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CHEMICAL PROCESSING

The News Magazine of Processing Developments and Control

Highlights

of This Issue

Blends flammable, poisonous
dusts without accidents or even
housekeeping worries 10

One operator replaces three
in layout of automatic pack-
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First water-soluble silicone —
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to continuously treat cyanide
wastes 42

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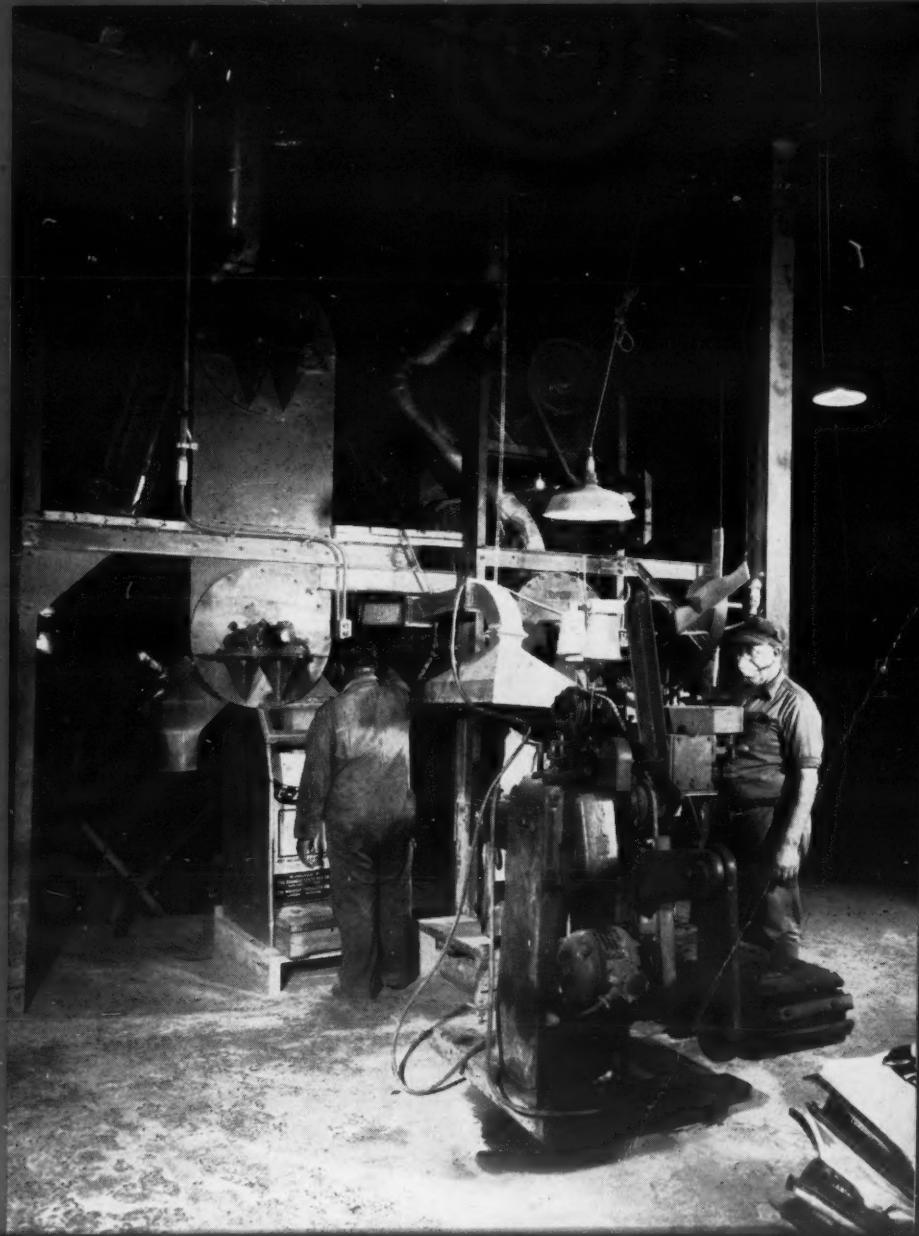
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The Cover Picture

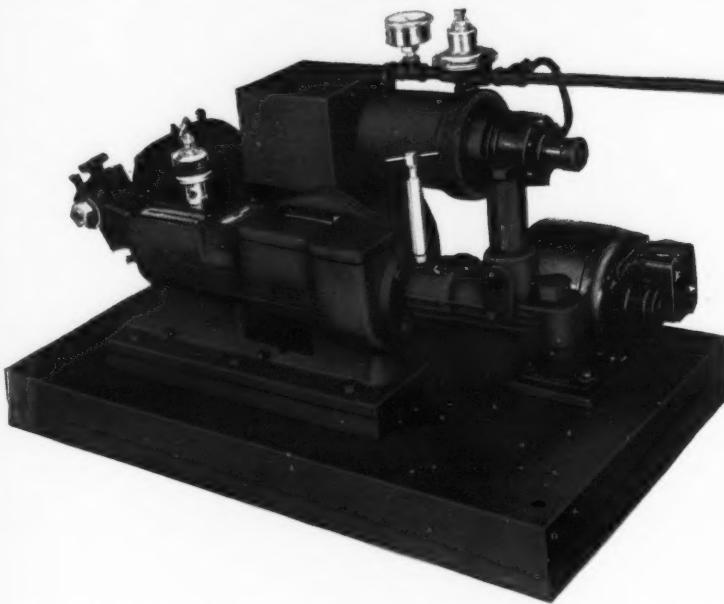
Parathion insecticide dust
being blended and bagged
at E-Z-Flo Chemical Com-
pany. Proper process de-
sign and equipment set a
safety record. See page 10

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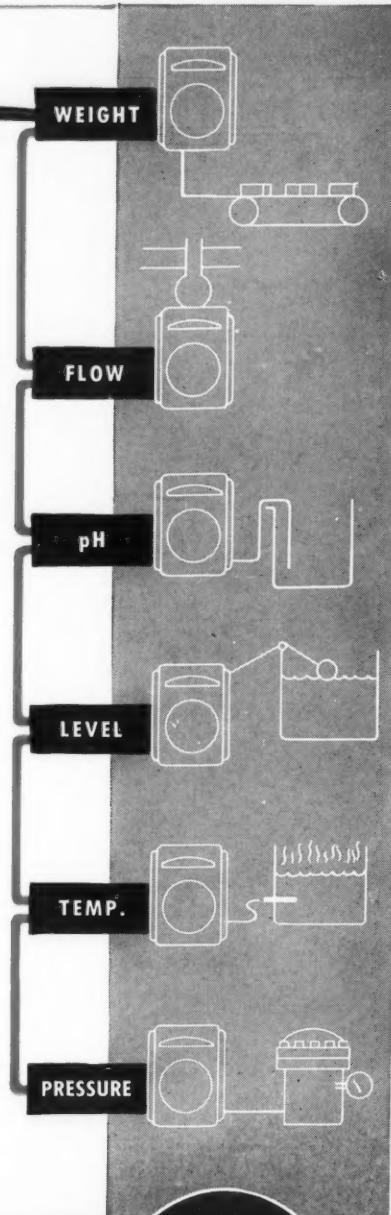


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"That's Interesting"

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According to report, the lightest solid in the world is a recently developed foamed-resin product. It weighs as little as 1/2 pound per cubic foot. As reported in "The Obmite News," this is 1/10 as light as balsa wood and only six times heavier than air.

**Insulates blowtorch
that's airborne**

The tail pipe of a jet engine expels heat at temperatures between 1250 and 1400°F. To keep the fuselage from being charred to a cinder, an insulating blanket of Inconel foil, Monel screen, and two kinds of refractory material is used. Insulating blanket made by H. I. Thompson Co., Los Angeles, Calif., is less than 1/2 inch thick.

The shiny Inconel reflects most of the radiated heat and refractory material absorbs the rest. Insulation is so effective that one can actually touch the outside of the blanket while the engine is operating.

**Odorless paint
in all colors**

Although formerly available in only flat white, odorless paints have branched out to include a full selection of colors. According to Keystone Paint and Varnish Corporation of Brooklyn, N.Y., this includes gloss, semi-gloss, floor paint, and varnish products.

**Speaker can operate this
projector himself, right
on platform**

Speakers may now avail themselves of a film projector which also provides the advantages of a blackboard. An additional feature is that speaker can avoid turning his back on his audience. He can stand at the projector, which is placed at his side on the platform, and operate it as he talks. The machine projects upon a screen a transparency or slide prepared from drawings, sketches or, in fact, any copy. These are placed beneath a wide, movable transparent tape which provides a "blackboard" upon which speaker may write notes while facing his audience or use a pencil as a pointer.

As images projected are of great clarity and brilliance, it is unnecessary to darken the room under ordinary conditions. (Beseler Lantern Slide Co., Inc., 200 East 23rd St., New York 10, N. Y.)

**Ultraviolet light installs
directly in line**

A new unit for continuously sterilizing water or other fluids with ultra-violet light can be installed directly in the line and operates automatically in such applications as brewing and pharmaceutical manufacture.

For more information on product at left, specify CP 3457
... see information request
blank between pages 2-3.

"That's Interesting"

Design research turns up novel package

While searching for an arrangement that would keep two pastes separate until they were ready for mixing and use, Dickens Inc. of Chicago, Ill., came up with a clever package for Wallace A. Erickson & Co. of Chicago. Both pastes were located in opposite ends of a polyethylene bag the size of one's palm. The bag was draped over a piece of string to form two compartments. Paper was folded over the bag and an outside metal clip completed the seal. The package looks similar to a book with pages uncut.

When the two pastes are to be mixed, one pulls the covers of the package to release string and metal clip. Two pastes can then be mixed and observed through polyethylene bag.

That blackboard we scribbled on is turning green

Color consultants have stepped into the classroom to replace the dull blackboards we recall with green acrylic plastic chalkboards. The grass color of this acrylic sheet is said to provide the most suitable hue for chalkboard areas. (The Rohm & Haas Reporter, Philadelphia 5, Pa.)

"Not up to scratch —?"

During World War I when big shipments of silver were made to China, a mining company's representative journeyed to Shanghai to deliver the bullion and complete the transaction. Understanding that the shipment would be checked for value he anticipated an elaborate sampling and assay procedure. Instead, the silver bars were laid out in a long row. Then, an old Chinese with extremely long finger nails passed down the row and scratched each bar several times with his index finger. It was explained that this expert could tell, by this simple procedure, just what bars would assay. When those that were rejected arrived back in Canada, it was found that they were slightly below standard. (From Deco Trefoil — Denver Equipment Co., Denver, Colo.)

Easier to fabricate

A new plastic foam, with uses similar to foam rubber, has been developed by Elastomer Chemical Corp., Nutley, N. J., with Bakelite Co. of New York.

The vinylite plastisol is mixed with gas under 400 lb pressure, discharged into a mold, and cured at 245 to 275 degrees. Product is more flame resistant, more chemical resistant and easier to fabricate than foam rubber. It can be molded into shapes and sheets of any thickness and can be sliced to 1/32".

Stainless wire mesh dries wet gases

Chemists and refiners are taking advantage of the properties of stainless wire mesh. Knitted mats of wire mesh have the ability to dry up wet gas with the same efficiency as blotters dry up wet ink. This characteristic permits processors to pass sopping wet gases through the mesh at 25 feet per second and obtain a liquid free product. According to "Steel Horizons," this mesh is being used in extraction columns for as many as 50 extraction stages. (Product of Otto H. York Company, Inc., East Orange, N.J.)

Alkaline derusting

Steel and iron alloys are being treated with an alkaline derusting solution at room temperatures. Advantages of this process are the elimination of subsequent rusting, no attack on base metal, and speed of operation. "Aminco Laboratory News" reports that the alkaline solution cleans and derusts simultaneously. Comparative tests as to speed of derusting were made by Enthone, Inc., 442 Elm St., New Haven, Conn. They indicate that derusting is accomplished by this process in fraction of the time taken by methods using hot sulfuric or cold hydrochloric acids.

(Continued on third cover)

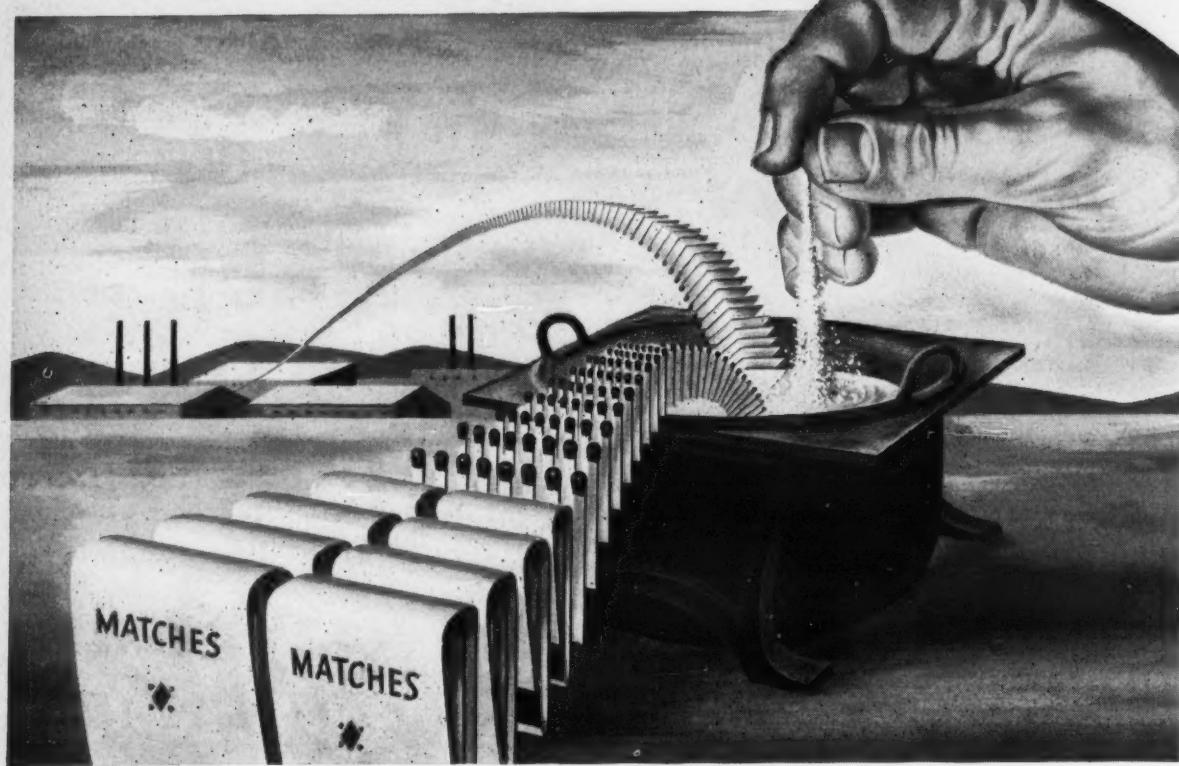
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When inquiring check CP 3458 on handy form, pgs. 2-3

Celite gives porosity...



Adding "Safety Valves" to match heads

Incorporated in match heads, Celite Mineral Fillers act as "safety valves" to prevent flare-up and kill afterglow.

The explanation: *Celite's porous, thin-walled, cellular structure gives the match heads greater porosity so that gas can escape quickly.*

Celite's abrasive quality also makes matches easier to strike. And from a production line

THESE CELITE PROPERTIES BENEFIT MANY TYPES OF PRODUCTS

Celite's minute, chemically inert particles have an irregular, spiny structure—which accounts for their efficiency as a delicate abrasive in polishes, as a flattening agent in paints, varnishes and lacquers, and as a reinforcing agent for paint films and rubber products.

Celite powders can absorb up to three times their own weight of liquid—making them particularly useful in preventing ammonium nitrate crystals from caking, in absorbing liquid insecticide poisons, and in controlling pitch trouble at paper mills. And because the loose

standpoint, the high absorptive capacity of this mineral filler speeds drying of the match heads... while its light weight and great bulk improve dispersion of the active chemicals in the match head mix.

These and other unusual physical characteristics adapt Celite Mineral Fillers to numerous industrial uses.

weight of Celite averages only 10 pounds per cubic foot—these mineral fillers are employed to fluff-up insecticide dusts and household cleansers, as well as to extend white pigments in paper manufacture.

If you are looking for the "extra something" to lift your product above competition—at no extra cost—why not discuss your problem with a Johns-Manville Celite Engineer? For further information and samples, write Johns-Manville, Box 60, New York 16, N. Y. In Canada: 199 Bay Street, Toronto 1, Ontario.

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- More Durable Finish
- Increased Viscosity
- Elimination of Caking
- Higher Melting Point
- Better Dry Mixing
- Improved Dispersion
- Greater Porosity

HIGHLIGHTS

(Continued from front cover)

These articles have been selected by the editors as having unusual interest

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When inquiring check CP 3459 on handy form, pgs. 2-3



(CHEMICAL PROCESSING PREVIEW)

The News Magazine of Processing Developments and Control

Vol. 15

JULY, 1952

No. 7

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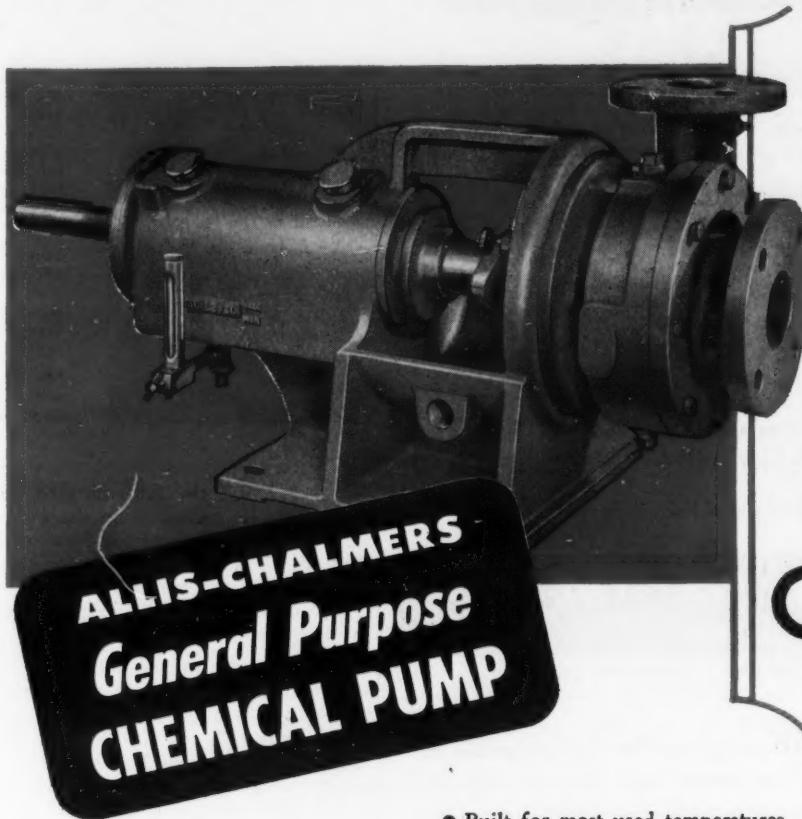
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When inquiring check CP 3462 on handy form, pgs. 2-3

Safe Handling of Corrosive Materials in the Industrial Laboratory

This editorial has been written at the request of the editors of CHEMICAL PROCESSING . . . and is authored by

BY E. V. SISUL
General Chemical Division
Allied Chemical & Dye Corporation



Mr. Sisul studied chemical engineering at Morton Jr. College, Cicero, Ill., and aeronautical engineering at Boeing Aeronautical School, Oakland, Calif. Also took courses in safety and fire protection engineering at Illinois Institute of Technology.

Worked in production control department of Lockheed Aircraft Corp. and safety and fire inspection division of Western Electric Co. Served with Ordnance branch of U.S. Army.

Mr. Sisul is presently concerned with safety, and fire protection inspection.



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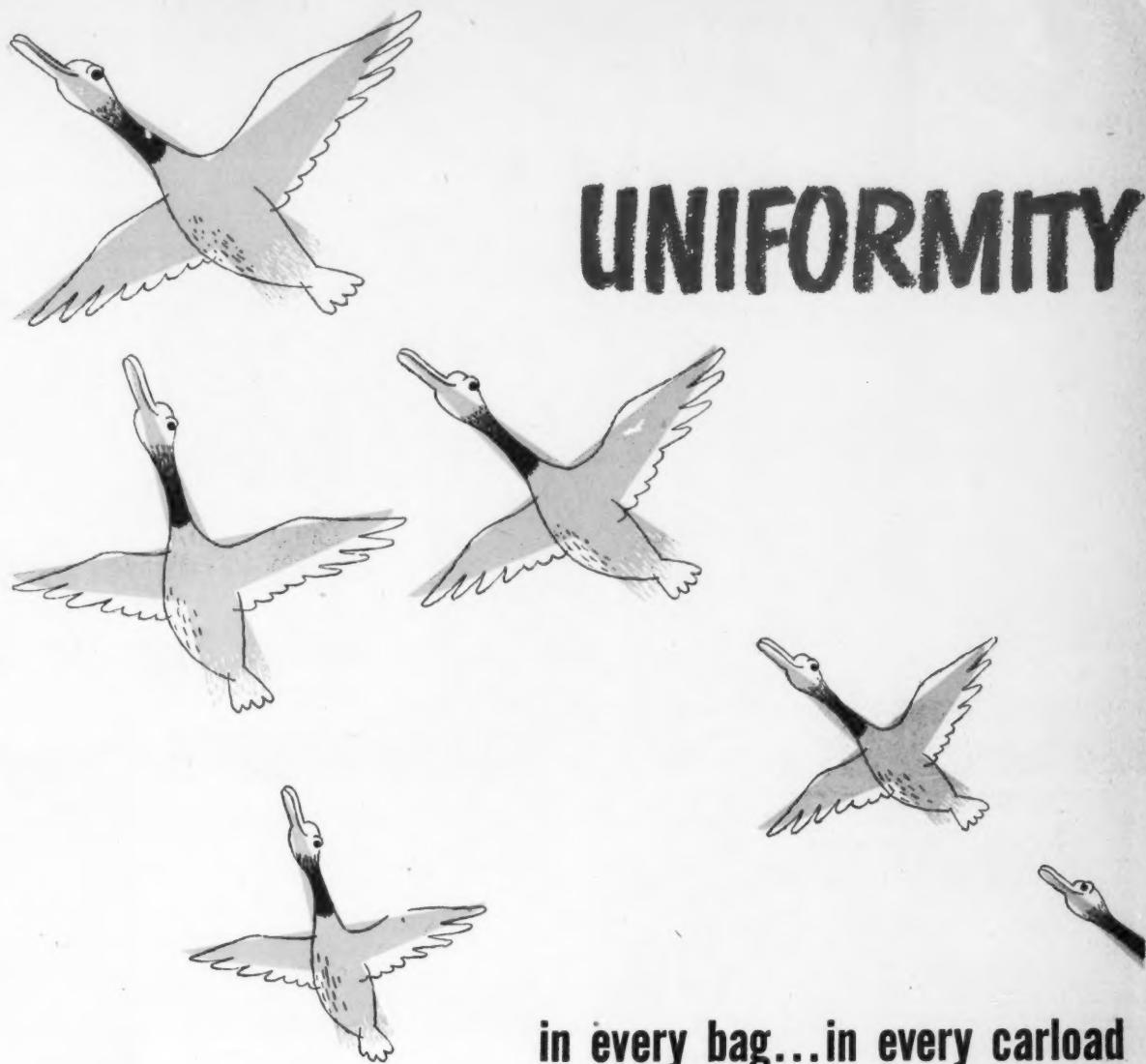
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CHEMICAL PROCESSING

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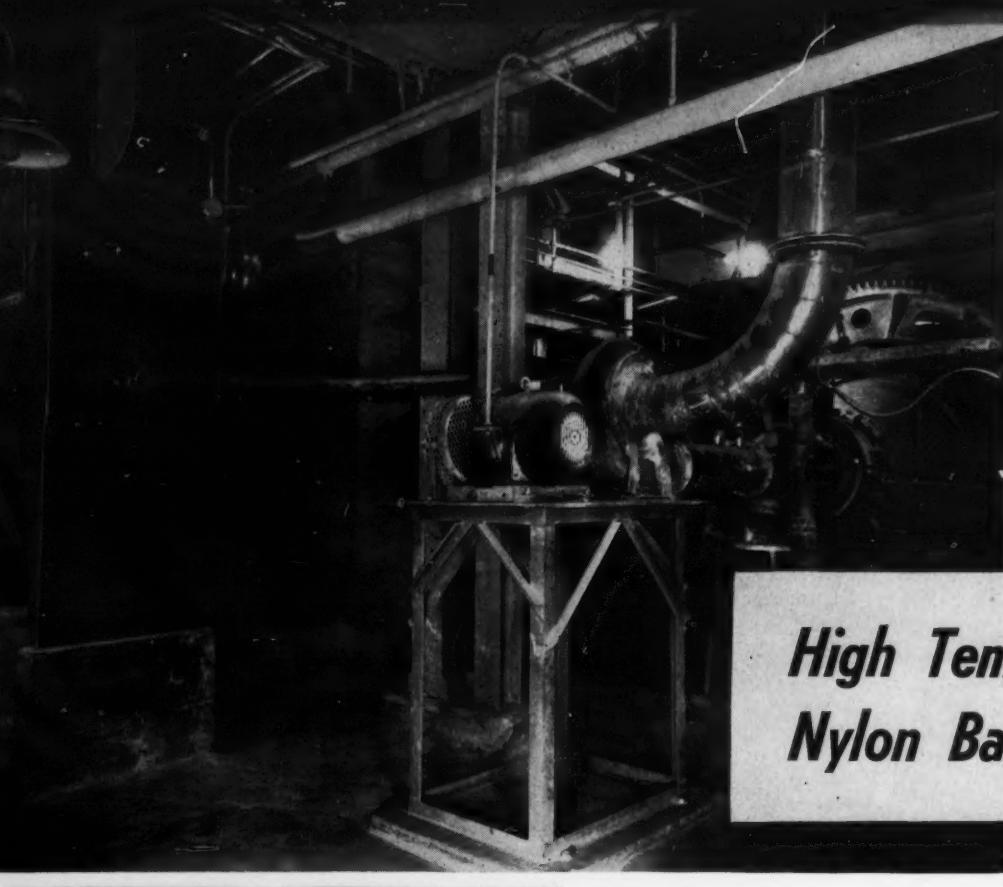


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High Temps and Moisture Don't Faze Nylon Bags in Dust Collector

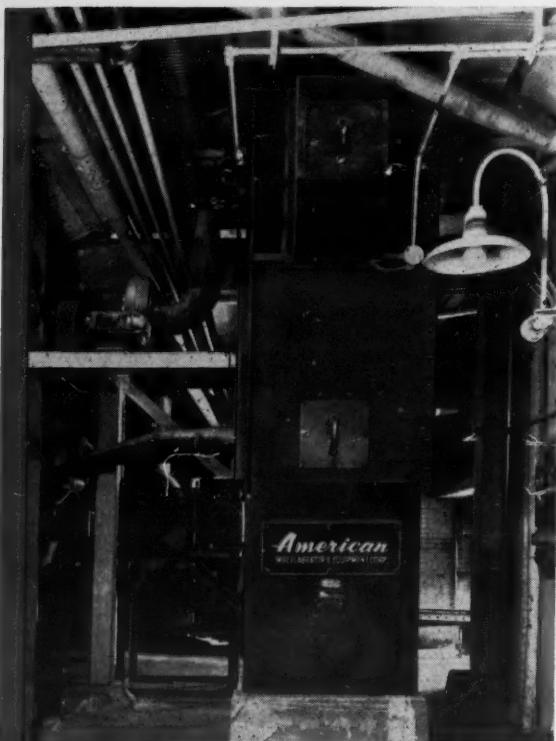
Dust collector is at left and pebble mill can be seen in right background. Collector ventilates pebble mill and a classifier in a closed circuit air system.

PROBLEM: Air temperatures up to 170°F, conditions of high moisture, and type of material being collected — all contributed toward making ventilation a difficult task in the grinding and classifying of enamel material. These were the conditions encountered by the American Radiator & Standard Sanitary Corporation at its Louisville, Kentucky plant which produces enameled cast iron plumbing fixtures.

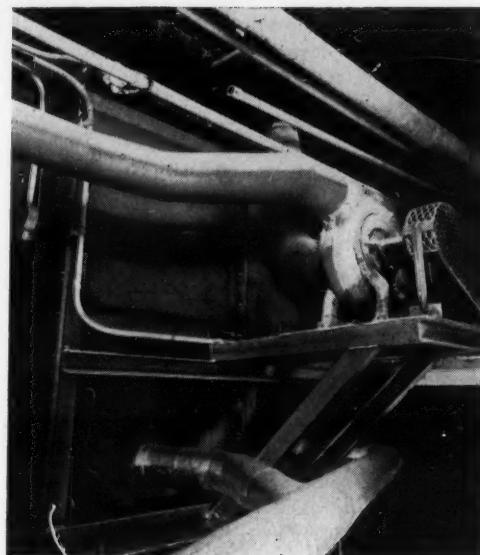
In the process itself, raw materials for the enamel are first mixed and melted in a furnace, then the mixture is cooled and sent to a Hardinge pebble mill. Mill is ventilated by a closed-circuit air system, velocity of which is controlled so that only material ground to a certain size is removed in the air current. Latter carries ground enamel to a classifier (centrifugal type) which in turn sends the correctly-sized material to the enameling department.

Fine material rejected by the classifier, since it is a closed circuit system, is returned to the mill. To keep the mill from becoming too dusty from material that is already ground too small, about 25% of the air is bled off and passed to the collector.

Solution: A dust collector using filter tubes made of staple nylon cloth has successfully met with the described conditions. The Model 65A Dustube is a two-compartment continuous automatic unit with a filtering



Side view of two-compartment, continuous automatic collector. Lower duct into left side of collector carries dusty air. Air passes up through staple nylon cloth filter tubes inside and leaves through the upper duct on the left side. Fan for collector can be seen on the discharge duct. This keeps the system under suction so that dusty air cannot leak out into room through joints in duct work



View of duct work of collector. Fan is seen on discharge duct

area of 540 sq ft — the filtration rate is 1200 cfm.

Air, upon entering the collector, passes through an expansion chamber where the velocity of the air decreases. Heavier particles of enamel dust drop out of the air stream, so that only the finest particles reach the cloth tubes. Therefore, abrasion of the cloth is kept to a minimum. The dust

which accumulates on the tubes is removed by mechanical shaking at intervals and falls down into a hopper from where it is removed.

One compartment automatically shuts down and the tubes in it are shaken while the other compartment continues filtration. A multiple circuit program timer is set so that the entire unit is shaken down every 15 minutes.

Results: Grinding and classifying of enamel is successfully ventilated, surrounding air is kept free of dust, savings are effected through reclamation and reuse of otherwise waste material.

(Model 65A Dustube is manufactured by American Wheelabrator & Equipment Corp., Dept. CP, Mishawaka, Ind. . . or for more information check CP 3465 on handy form, pages 2 and 3.)

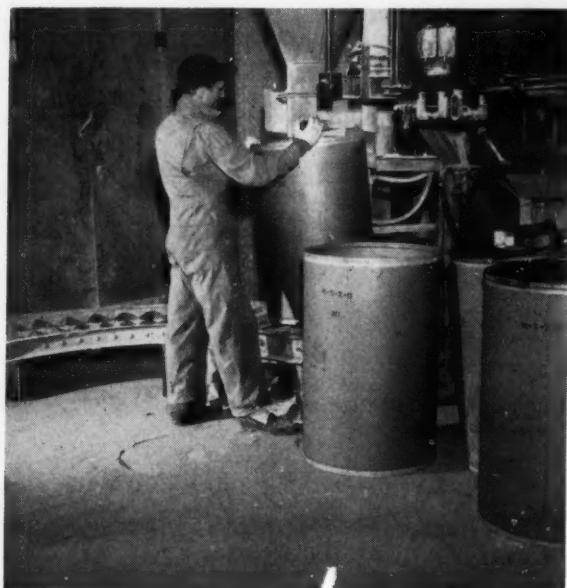
Non-caking and fireproof, absorbent ended hazard of sloppy floors

It doesn't dust or turn to mud; it does absorb water, oil, grease, or almost anything else

PROBLEM: Like many other processing plants, Wyandotte Chemical Corporation at Wyandotte, Mich. can't avoid occasionally spilling solutions or water on floors. Some of the alkalis and cleansers, typically slippery or "soapy" in feel, make for dangerously slick floors.

Added to this, *No Smoking* requirements in some sections rule out flammables like sawdust.

Solution: Wyandotte didn't have far to go for an answer — their own product Zorball satisfied all the requirements. Zorball is a buff colored calcined clay which will absorb oil and water approximately equiva-



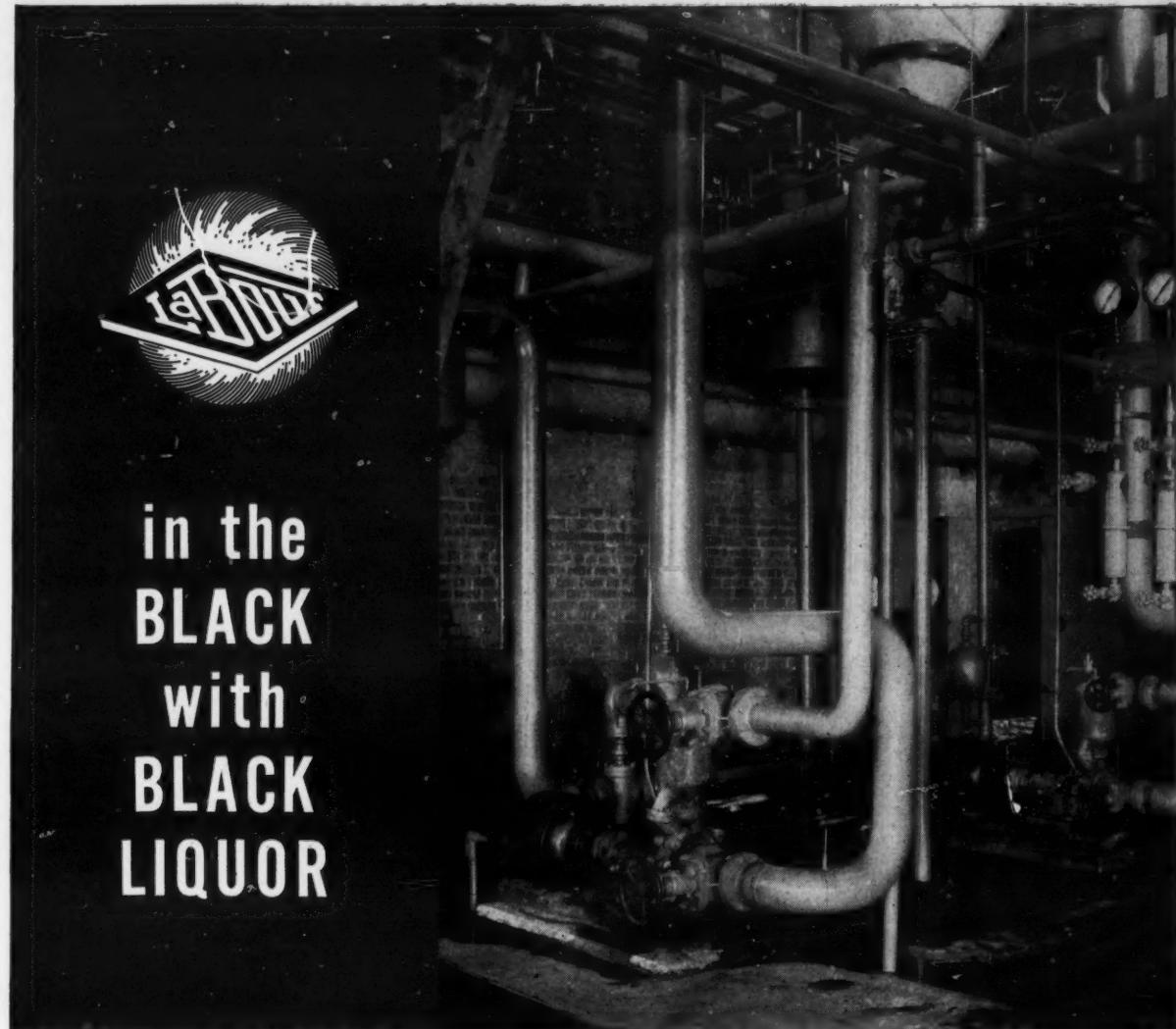
As shown here, material is used to control dust

lent to its own weight without crumbling or becoming muddy. Individual particles about 1/16-inch in size retain their "gritty" character to provide footing, even when wet.

Chemically inert, it is non-flammable, can be used in *No Smoking* areas, and is listed by Underwriters Laboratories. Zorball retains its non-flammability even when saturated with oil.

In sloppy areas, Wyandotte spreads the material about 1/2-inch thick. When it has soaked up its capacity of

(Continued on page 12)



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**in the
BLACK
with
BLACK
LIQUOR**

It isn't hard to figure what a pump failure would do to operating costs on the five-body, quadruple effect black liquor evaporator served by these pumps. That's why they're LaBours, and *that's* why there's no red ink in the accounting.

This Kraft mill job was built by Swenson Evaporator Company, who specified the LaLabour

pumps because they've had a lot of experience with them over the years. There isn't any substitute for dependable service, and LaBours have proved their dependability beyond question.

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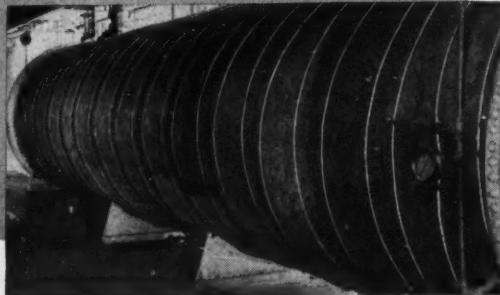


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THERM-ENOMICS by Baldwin-Hill

how Keeping Heat in a Vulcanizer

MEANS ALL-AROUND SAVINGS FOR YOU



1. Wrap B-H metal-reinforced Black Rockwool Blankets around the vulcanizer's external surface—butt blanket edges carefully to secure a blending interlock. B-H Blankets are excellent insulation for any curved or irregular surface and give protection up to 1200°F.

*Saves
overlapping
waste*

2. Bind blankets with galvanized steel bands, but *FORGET* about wrapping the blanketed area with wire or metal fabric. The metal-reinforcing layer built into every B-H Blanket forms a perfect binding and base for finishing cement.

*Saves
one complete
operation*

3. Apply one thickness of Powerhouse Cement—let it dry and paint the finished coat. B-H Powerhouse Cement forms a perfect bond with the B-H Blanket and dries quickly to a smooth, paintable surface.

*One coat
application
Saves time*

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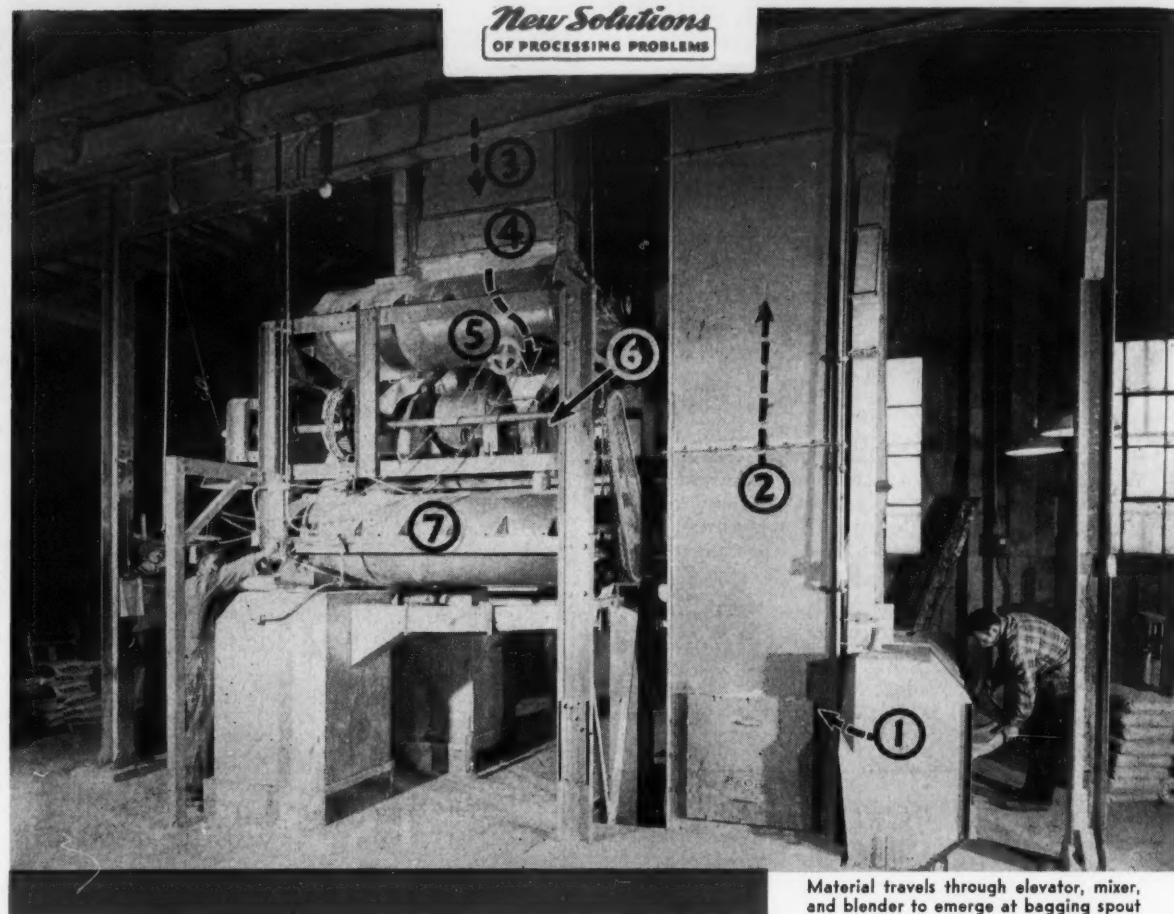
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When inquiring check CP 3467 on handy form, pgs. 2-3



Material travels through elevator, mixer, and blender to emerge at bagging spout

Blends flammable, poisonous dusts without accidents or even housekeeping worries

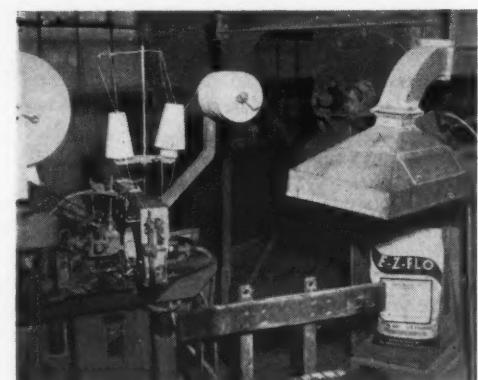


Intelligent use and arrangement of equipment counts in producing insecticides and fungicides

PROBLEM: Most people would sooner go look for a gas leak with a burning match than tackle the problem of blending parathion insecticide dust. Deadly enough to have been considered by the Germans as an anti-personnel weapon during the war, this material is especially dangerous because of its light, powdery consistency in insecticide dust.

Parathion dust is one of 51 formulations turned out by the E-Z-Flo Chemical Company of Lansing, Mich. Other dusts, though not as dangerous to workers, present their own special problems. Finely powdered sulfur, a constituent of some dusts, has a nasty habit of catching fire during blending, for example. And even without the danger aspect, handling dusts could be a dirty, annoying job.

Solution: Safety and good housekeeping at the plant can be attributed to intelligent use of equipment designed for the job. E-Z-Flo uses two dust-tight blenders. Hoods, dust collectors, and



Prominent dust hood sucks up any leakage during transfer from bagging station to sewing machine

CHEMICAL PROCESSING

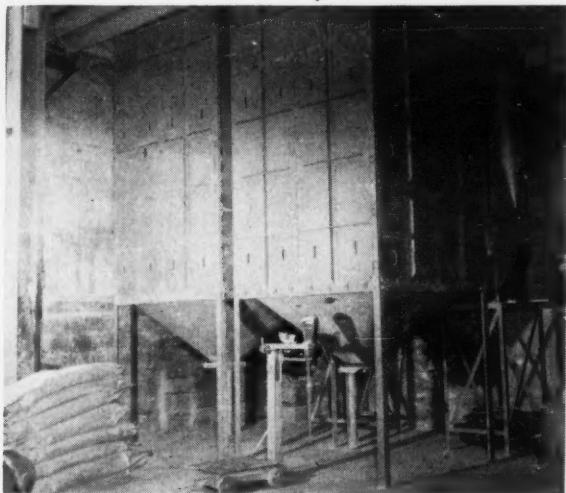
dust-tight elevators permit almost all the handling to take place where dust can be confined.

In blending a batch, components are weighed and dumped through a brush sifter (1) into hooded elevator opening. Elevator (2) carries them up and into a hopper (3). Magnetic separator just before the hopper keeps tramp iron out of the mill. From the hopper, they fall into another brush sifter (4) which scalps mixture and breaks up any coarse lumps. Pre-mixing is carried out in large cylinder (5) at top before dust is fed into a high-speed disc type blending mill (6). Special discs rub particles of one type into those of another. Dispersion, rather than grinding results — as attested by the low power consumption and slight (9°F) temperature rise.

Following milling step, dust drops into a blender (7) and finally emerges through a dust-tight bagging spout. Since the unclosed bags of dust constitute a potential hazard as soon as they are filled, a dust hood has been placed so as to prevent any accidents between bagging and closing bags on a sewing machine. This hood, and all others, are connected to a central dust-collecting system.

Nipping Fires In The Bud

If a fire should start inside the blender, a carbon dioxide system can quickly end it. Tanks of CO₂ are kept nearby, permanently attached to lines running into all danger spots in the equipment. Since the tanks are



Dust collectors are located behind blenders, as shown in photograph

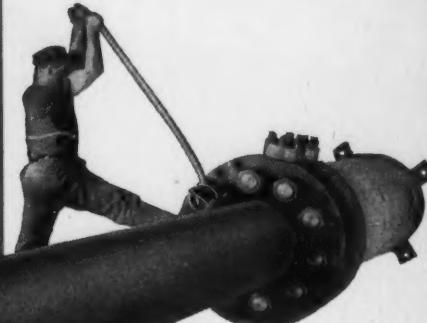
located directly behind bagger, he could reach them and release the gas in a few seconds after detecting trouble. Permanent piping for the CO₂ would allow fires to be stopped without ever opening the blender and allowing dust to escape.

Results: This equipment has been operating for two years without accidents or fires. Each of the two blenders can be run at a rate of seven to ten 500-pound batches an hour. Locating the blenders in their present position has made it possible to sew bags from both on a single sewing machine (though the second machine is kept as a spare). And overall labor requirements have been cut 35 to 40 per cent — not counting clean-up time saved by the dust collector.

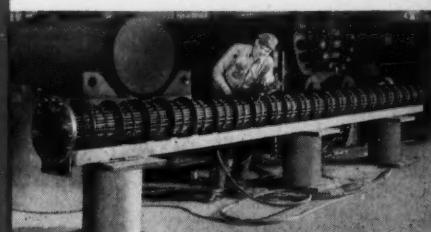
(Blending equipment and elevator were furnished by Sprout, Waldron & Company, Inc., Dept. CP, Muncy, Pa. . . or for more information check CP 3468 on handy form, pages 2 and 3.)

A.O.Smith Multi-Layer Heat Exchangers

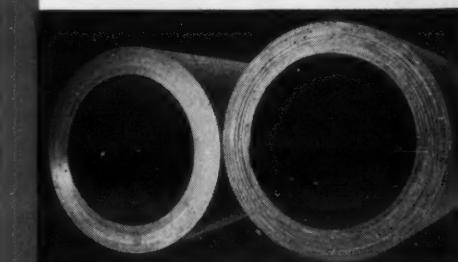
Meet the Challenge of High Pressure Specifications



MULTI-LAYER Heat Exchanger for an ammonia plant. The shell, designed for 5150 psi working pressure, is 23 inches and 13 $\frac{1}{4}$ inches in diameter with wall thickness of 4 $\frac{1}{4}$ inches and 3 inches, respectively.



Heat Exchanger tube bundle for the above is designed to take advantage of low differential operating conditions within an exchanger designed for 5150 psi chemical process.



MULTI-LAYER shell courses showing wall of concentric layers of steel plate. End at right has wrapping completed; at left, machined and scarfed for welding to next course or closure.

A.O.Smith
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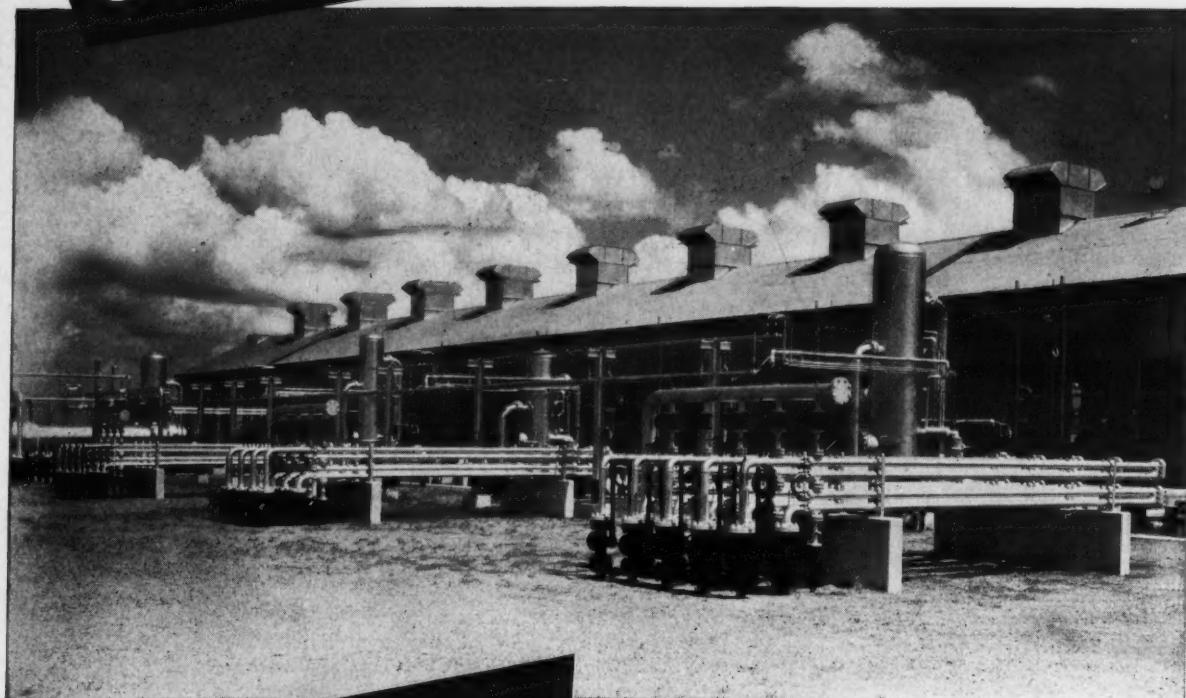
Without obligation, send me bulletins and information on your **MULTI-LAYER** Heat Exchangers and their construction features.

Name _____
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When inquiring check CP 3469 on handy form, pgs. 2-3

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in **your** plant



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When inquiring check CP 3470 on handy form, pgs. 2-3

NEW SOLUTIONS of processing problems

(Continued from page 9)



Dark material is wet; freshly spread it is light buff in color

liquid, they sweep it up and replace it. If floors are dry in the first place, Zorball actually helps hold down dust and it will not track into surrounding areas.

(This material is available in 50-pound paper bags from Wyandotte Chemical Corporation, Dept. CP, Wyandotte, Mich. . . or for more information check CP 3471 on handy form, pages 2 and 3.)

**One operator replaces three
in layout of automatic
packaging line . . .**

triangular arrangement permits operator to feed machine and pack finished product

Problem: American Artists Color Works, Inc., in Brooklyn, New York, were confronted with a floor space problem as well as a cost per unit problem in the highly competitive artists colors field. Their process-



Illustration shows layout of automatic packaging line. In actual operation, woman would stand between boxes (foreground) and machine. Packaging would proceed in counter-clockwise direction

ing involved packing their product in jars of various sizes and special shapes. The packaging line required three women to feed glass jars into the automatic machine and to pack the finished product.

Solution: A triangular layout was provided for them by Tite-Cap Machine Co., Inc. This set-up permits one operator to be stationed in the 24" space between the feeding table and the table which receives the filled

NEW SOLUTIONS of processing problems

and capped jars. First, the operator empties a carton or two of glass jars onto the feeding table; then she turns around to fill the same cartons with the finished product from the receiving line.

Results: No wasted steps or motion; no lost time. Output is regularly 43 containers per minute which formerly required three operators. Installation occupies only a small corner in contrast to large space previously required for same output. Because of saving in space and labor, complete installation paid for itself in just a few weeks.

(Complete installation is available through Tite-Cap Machine Co., Inc., Dept. CP, 57 Rose St., New York 32, N. Y. . . or for more information check CP 3472 on handy form, pages 2 and 3.)

Photographic paper produces positive print without using negative . . .

emulsion reacts to light in reverse manner from paper used by photographers

Announcement is made of photo paper which produces a positive print without employing an intermediate negative. Emulsion reacts to light in directly opposite way from regular paper used by photographers. It differs from other papers in that it allows production of positive prints with conventional equipment and processing. Paper was described at 26th annual meeting of Blue Print and Allied Industries at White Sulphur Springs, West Virginia.

When reversal paper is exposed to light and developed in fogging developer, unexposed areas turn black. In areas exposed to light, fogging action of developer is inhibited, resulting in positive image. On usual photographic paper, light-struck areas turn black during processing, so that an intermediate negative is required for a positive image.

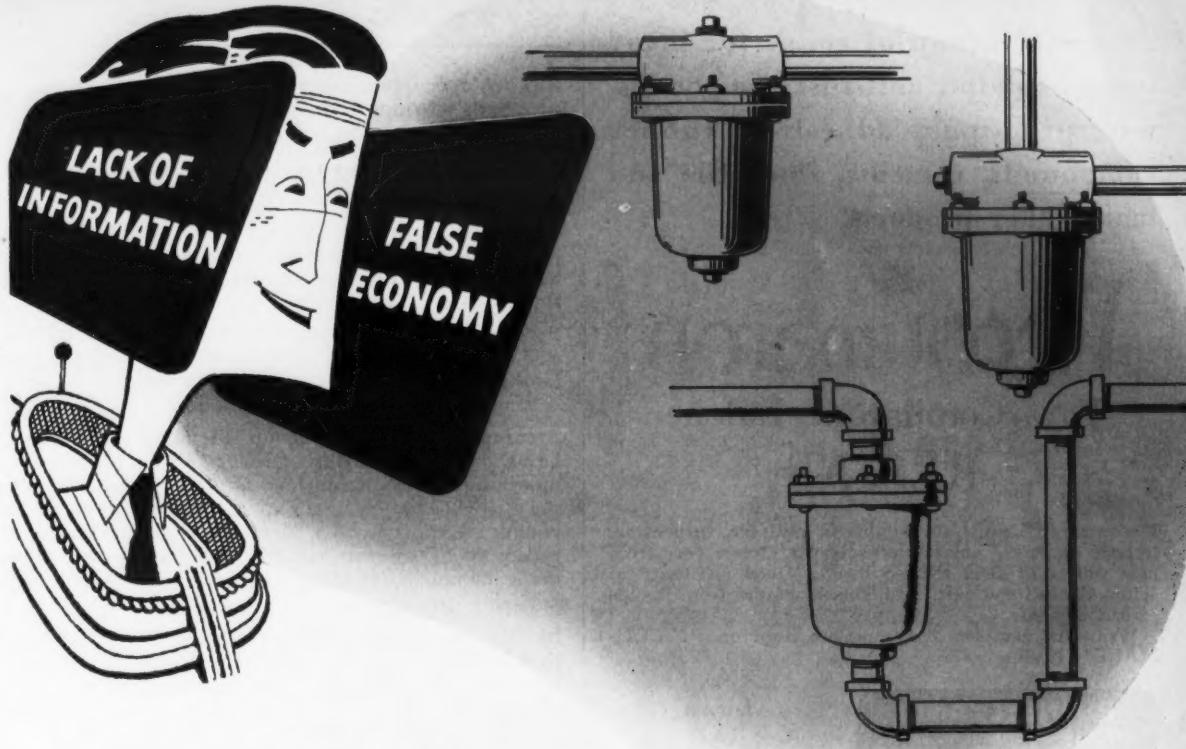
Reversal paper has been under trade trial for past two years. It has been used for copying waybills at Pennsylvania Railroad Offices in Philadelphia. Canada Steamship Lines have conducted similar experiments. Paper is being supplied initially by Photostat Corp. of Rochester, N. Y., for use with photostat equipment. Eastman Kodak Company is investigating several other possible uses.

(Courtesy of Eastman Kodak Company, Dept. CP, 343 State St., Rochester 4, N. Y.)

Filing control selects any one of 60,000 master cards

Synchronized machine for punching tabulating cards may be used in such record keeping procedures as order writing, preparation of shipping tickets, mailing labels, special parts lists, and master file changes. Remote control sensing unit makes possible selection of any one of 60,000 master cards contained in file cabinet.

Unit provides quick location of proper master card in motorized file, transfer, selection and punching of desired information onto new tabulating card, and the opportunity to enter variable data as required. These operations are controlled from single keyboard located at operator's fingertips. Complete information on Card-O-Matic Punch, Type 308-3, is available from Remington Rand, Inc., Dept. CP, 315 Fourth Ave., New York 10, N. Y. When inquiring specify CP 3473 on handy form, pages 2 and 3.



BEFORE BUYING STEAM TRAPS REMOVE THE BLINDERS

Before you install new Steam Traps or replace worn out traps, be sure you are not bothered by "lack of information" or "false economy" blinders. Many replacement trap buyers are hindered by false economy . . . believing it cheaper to continue using their present old style trap. Remove all trap buying blinders . . . send for your copy of "Solving Steam Trap Problems" today. Check the economy features

of replacing present systems with Anderson Super-Silvertop Steam Traps. You'll find they cost no more than most ordinary traps . . . yet Super-Silvertop Steam Traps can be serviced without removing the trap from the line, saving 30 minutes service time. Note too, that the valve and seat are made of longer lasting Anderloy* alloy . . . with the bucket guided on a center tube, eliminating bucket damage and costly repair. 3 pipe connections in the head allow the trap to be installed straight-in-line or as an elbow saving up to 50 minutes installation time and as many as 7 fittings.

For the complete story on trap economy, be sure to mail the coupon for booklet today.

*Trade Mark Registered in U. S. Pat. Off.



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Address

City

In Canada: Bawden Industries, Ltd. Toronto

When inquiring check CP 3474 on handy form, pgs. 2-3

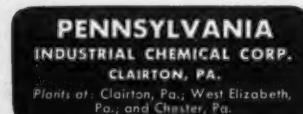
A useful group of resins for many types of paint, anti-rust compounds, waterproofings, adhesives, rubber compounds, cements, floor tile and many other products.

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RESINS

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Write for samples and complete data on PICCOUMARON Resins.



Distributed by Pennsylvania Falk
Chemical Co., Pittsburgh 30, Pa.
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Co., Akron 5, Ohio

When inquiring check CP 3475 on handy form, pgs. 2-3

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NEW SOLUTIONS of processing problems

Hexachlorocyclohexane process proceeds without formation of by-products . . .

German patent application claims improved method for producing gamma isomer

Higher-chlorinated by-products are not formed in process described for manufacturing hexachlorocyclohexane. This claim has been made in a German patent application.

Benzene is chlorinated in presence of light and sulfuric acid. After separation of acid, gamma isomer is obtained from solution, without further intermediate treatment, by fractional crystallization.

According to information in literature, mixture of hexachlorocyclohexane isomers results from introduction of chlorine into benzene in presence of aqueous caustic soda under action of sunlight or ultraviolet rays. Compounds are contaminated, however, by products of higher degree of chlorination. It is necessary to remove these unpleasant-smelling impurities by complicated purifying processes.

In German process hexachlorocyclohexane of unobjectionable odor is obtained if chlorination is carried out in presence of a highly concentrated oxygen acid such as sulfuric acid under simultaneous exposure. Temperature of reaction must be controlled.

Following separation of sulfuric acid, liquid is removed from vessel while hot. Gamma isomer is then extracted in customary fashion by fractional distillation.

Process has other advantages besides elimination of by-product formation and objectionable odors. Reaction takes place without appreciable evolution of hydrogen chloride. Stoppages caused by crystal deposits at point where chlorine is fed in are prevented. In general, process is greatly simplified.

(Report No. 6529 is translation of above patent application published by Research Information Service, Dept. CP, 53 Nassau St., New York 38, N. Y. . . . or for more information check CP 3477 on handy form, pages 2 and 3.)

Mills saves precious floor space by using vertical pump for paper stock . . .

feeder vane before impeller prevents clogging of pump by solid slugs of stock

Conservation of floor space is one of the main reasons why Thilmany Pulp and Paper Company, Kaukauna, Wisconsin, went to a vertical stock pump in a recent expansion.

These pumps utilize one-third of the floor space necessary for the conventional horizontal types. Just as important in this installation is a feeder vane assembly, a part of the pump, that breaks up solid slugs of stock before they reach the pump impeller and clog it.

Stock is stored at 14% consistency in three storage tanks. One pump serves to drain two tanks. Two six-inch water lines are connected in two feet and ten feet above the pump suction to dilute the stock prior to being pumped. Diluted stock leaving the pump is screened prior to the time that it moves through the consistency regulator.

The Type TVG is arranged so that the stock falls into the impeller inlet which is located at the lowest elevation

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For gaskets, packing and other equipment for the process industries, "Teflon" offers this unusual combination of properties . . .

- **CHEMICAL INERTNESS**—inert to all chemicals except molten alkali metals, and fluorine under extreme conditions.
- **EROSION RESISTANCE**—resists erosion by impinging fluids.
- **LOW COEFFICIENT OF FRICTION**
- **LOW TEMPERATURE TOUGHNESS**—used at temperatures as
- **ANTI-ADHESIVE PROPERTIES**—nothing sticks to "Teflon" with any appreciable strength.

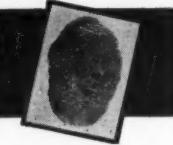
The Du Pont Polychemicals Department supplies "Teflon" in the forms of molding powder and aqueous dispersions. We'll gladly suggest names of molders and fabricators of sheets, rods, tubes and finished parts. For full information, write: E. I. du Pont de Nemours & Co. (Inc.), Polychemicals Department; District Offices: 350 Fifth Avenue, New York 1, N. Y.; 7 S. Dearborn Street, Chicago 3, Ill.; 845 E. 60th Street, Los Angeles 1, Calif.

*Trademark for Du Pont tetrafluoroethylene resin

150th Anniversary
BETTER THINGS FOR BETTER LIVING
...THROUGH CHEMISTRY

When inquiring check CP 3478 on handy form, pgs. 2-3

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Like a finger print, there is no matching a Viking Rotary Pump. There are a lot of pumps that look like Viking but none are built like Viking.

Insist on the genuine "gear-within-a-gear" Viking . . . the time-proved, dependable, quality-built pump that out-performs all substitutes.

Building for over 40 years the now most copied of all rotary pumps, assures you of receiving the pump that can't be matched anywhere.

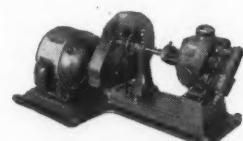
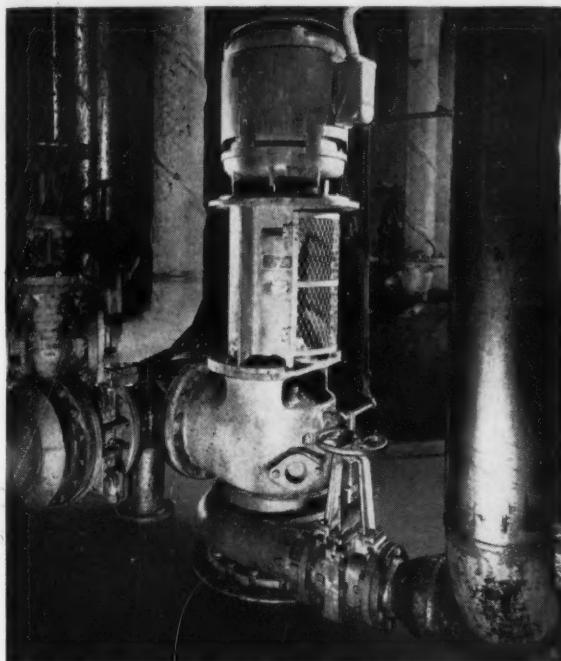


FIG. 12

For additional information, ask for bulletin 525CC today.

Viking PUMP COMPANY
Cedar Falls, Iowa

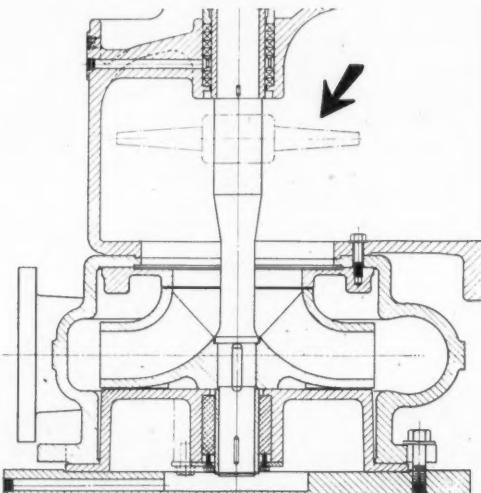
When inquiring check CP 3479 on handy form, pgs. 2-3



Vertical paper stock pump at Thilmany Pulp and Paper Co.

possible in relation to the suction storage tank. This tends to eliminate air binding and assures complete periods, an important consideration when processing high-consistency paper stock.

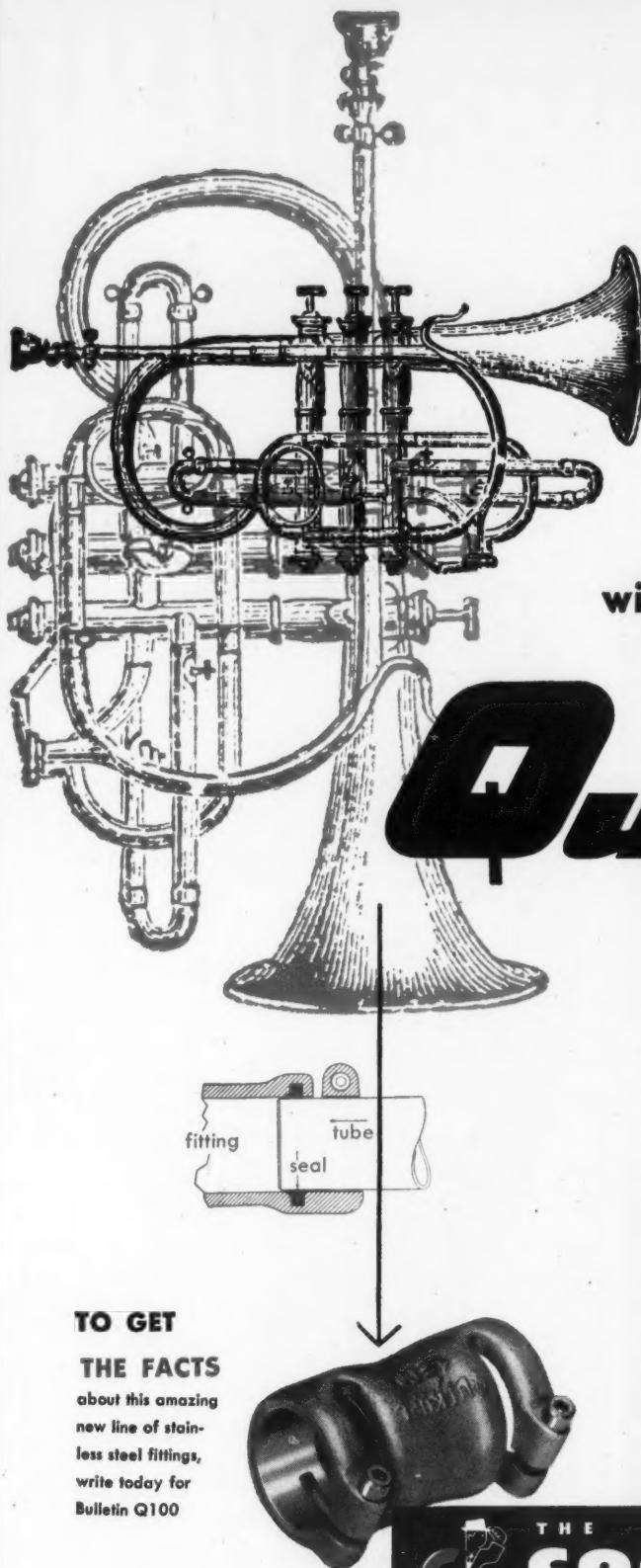
Suction elbow has two cleanout holes, five inches in diameter and located 90 degrees apart. The feeder vane assembly can be mounted on the shaft through these holes.



Arrow points to feeder vane assembly which breaks up solid slugs of stock and allows a more even flow at desired consistency. Assembly can be serviced through two five-inch holes in suction elbow (not evident in sketch)

(Pumps were supplied by Allis-Chalmers Manufacturing Company, Dept. CP, Milwaukee 1, Wis. . . . or for more information check CP 3480 on handy form, pages 2 and 3.)

JULY, 1952



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THE FACTS**
about this amazing
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less steel fittings,
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an economical
stainless steel fitting
for joining pipe or tube
without threading or welding

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LEADING PRODUCER OF STAINLESS STEEL VALVES, FITTINGS & CASTINGS

When inquiring check CP 3481 on handy form, pgs. 2-3

Page 15

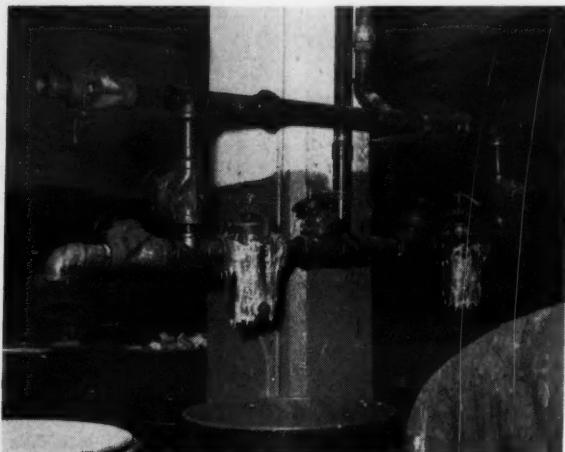
**Sticky fluid can't gum up the works
if packless diaphragm protects
valve bonnet . . .**

production delays are stopped, maintenance costs are virtually eliminated by proper valve selection

Problem: In piping of air-pressurized liquid latex in a large paint factory, (Adams & Elting Div., The Glidden Co., Chicago) conventional valves formerly used were unsuited since the sticky latex accumulated in the bonnet and stem threads, freezing the stem, and making valve operation difficult or impossible. With ten or more operating cycles each day, the plant experienced considerable valve trouble and additional maintenance expense.

Solution: Packless diaphragm valves, featuring separate discs and diaphragms, were installed to replace the other valves used in the system.

Results: Both valve trouble and maintenance cost were eliminated by the new installation. Neoprene



No more worries about these six packless diaphragm valves being stuck or "frozen" by leakage of the sticky material through the bonnet. Easy operation assures high flow capacity for which the "Y"-pattern body was designed. Larger photo below shows closeup of external construction of the iron-bodied valves.



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Provides greater sifting capacity and easier cleaning.

3. EXTERNAL TIE RODS

Easy to disassemble . . . makes changing sieves for various applications easy.

4. ENCLOSED X FRAME

Completely sealed frame keeps impurities out of sifter.



5. TWO-PIECE SIEVE FRAME

Allows thorough cleaning with air, brush or water.



6. SEPARATE BOTTOM HOPPER

Simple replacement of sieve stack without disconnecting tubes.

7. MID-SIEVE TIE RODS

No product leakage — keeps floors clean. Quick product changeover.

2. ONE INLET — TWO OUTLETS

Eliminates excess connections . . . simplifies maintenance.



3

1

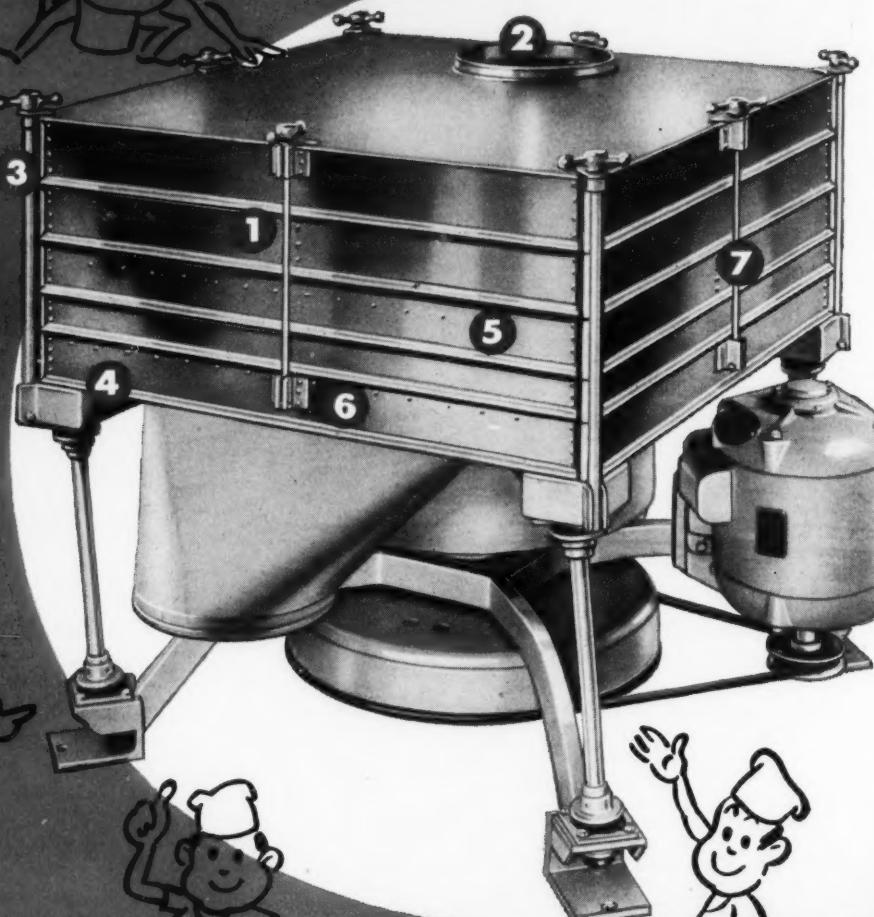
2

4

6

5

7



8. QUIET

Dynamic balance insures vibrationless operation.

9. WIDE RANGE

Will handle any product size from 2 to 200 mesh.

10. LOW OPERATING COST

Circle sifter requires less than 1 hp operating power.

and lower manufacturing costs!

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YOU'LL FIND that the versatile *Circle* Sifter is built to help solve your problems of controlling quality and lowering manufacturing costs. When you use this modern sifter for quality control, you know your product is free of foreign material. And, to help lower manufacturing costs, you get consistent, highly accurate grading on a capacity basis.

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Chemical Milling and Processing Equipment



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Ask any A-C representative for bulletins 06B7633 and 06B7625 and the complete story on the *Circle* Sifter. Or, use the handy coupon.



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 Send bulletins 06B7633 and 06B7625.
 Please have A-C representative call.

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City _____ State A-3757

When inquiring check CP 3482 on handy form, pgs. 2-3

NEW SOLUTIONS of processing problems

diaphragm acts as bonnet seal to prevent leakage of the latex on to the working parts, yet isn't pinched or stressed when the valve is closed. Smoother operation with no sticking or "freezing" is reported. Results have led user to order more valves of the same type for proposed new latex lines.

(Iron Body Packless Diaphragm Valve, either fully Neoprene-lined or unlined, is a product of Crane Co., Dept. CP, 836 S. Michigan Ave., Chicago 5, Ill. . . or for more information check CP 3483 on handy form, pages 2 and 3.)

Thermocouple measures specimen while operator controls cooling rate . . .

NBS improved crystal-growing technique minimizes unwanted growth in crystallographic studies

An improved technique for growing small crystals of high-melting compounds, and which should also find application in crystallographic studies in other fields, is now being used at the National Bureau of Standards. In the new method, a hot-thermocouple apparatus heats the specimen and measures its temperature, while the operator watches crystal growth through a stereoscopic microscope and manually controls rate of cooling. The method was devised by Fred Ordway, of the Portland Cement Association Fellowship at NBS, to meet needs arising in an X-ray diffraction study of portland cement clinker.

While large size is not necessary (crystals only 0.05 to 0.1 mm in least dimension can be used with ordinary X-ray cameras) the ideal specimen should be pure, free from flaws or twinning, and sufficiently developed that the crystallographic axes can be found from the orientation of the edges and the faces. It was to meet these requirements that the new technique was devised.

Earlier work indicated that single crystals are grown most satisfactorily by manually controlling the cooling of the smallest droplet that will yield a crystal large enough to be used. With a droplet of small size, possibility of unwanted crystals is minimized. Furthermore, the droplet can be observed through a stereoscopic microscope during the entire crystallization process, which may take several hours. Twins or other extraneous crystals can thus be detected and melted away as soon as they form.

The NBS technique facilitates precise control of the cooling process. A thermocouple of platinum and platinum-10 per cent rhodium is mounted under a stereoscopic microscope. The thermocouple is heated with 5 kc AC, supplied through a blocking capacitor. The capacitor prevents the AC power supply from shorting the direct-power output of the thermocouple, which is measured on an external microammeter that can be calibrated in degrees centigrade.

A small amount of the material under study is placed on the thermocouple, melted, and carefully cooled while crystal formation is watched through the microscope. Although precise control of the cooling process does not require knowledge of exact temperatures, calibration of the NBS apparatus for melting-point determinations indicates a maximum measurement error of only 5°C in the range 770° to 1420°C.

The crystal-growing apparatus is described in more detail in "Techniques for Growing and Mounting Small Single Crystals of Refractory Compounds," by Fred Ordway, J. Research NBS 48, 152 (February 1952), RP2299. (Information supplied by NBS, U.S. Department of Commerce, Washington 25, D. C.)

First Water-soluble Silicone — Chemical Composition Stated

See improved water repellency for masonry, textiles, paper and paperboard

USES: Can be applied to surfaces or used as an integral mix to impart water repellency to a wide variety of materials — cotton, textiles, paper and paperboard, etc. Can also be used as a chemical intermediate in the manufacture of water repellents or other chemical materials where the properties imparted by silicones are required.

Features: A unique silicone — it's water soluble.

Description: Active ingredient of SC-50 water soluble silicone is sodium methyl silicate, the monosodium salt of methyl silicic acid. In dilute aqueous solutions it is believed to exist largely in a monomeric form. When dried it loses water and forms a polymer which is readily redissolved in cold water.

Since silicon does not form double bonds with oxygen, and since silanols are easily condensed to polysiloxanes, concentrated solution of sodium methyl silicate probably contains many kinds of polymers, such as the dimer.

SC-50 is further unique in that it is non-flammable, non-corrosive, stable in storage, and odorless. It may be used without a high temperature curing cycle and may be applied to damp surfaces.

Applications: Quantities of SC-50 required to make a solution containing 2% silicone are:

SC-50	10.0 parts by weight
Water	90.0 parts by weight
Total	100.0 parts by weight

Two components should be mixed thoroughly. Properties of such a 2% solution are:

Silicone solids (as $\text{CH}_3\text{SiO}_{1.5}$), %	2.0
Basic solids (as Na_2O)	approx 0.93%
pH	approx 13
Freezing point, °C	approx -1

Dilute SC-50 solutions (1-5% silicone) applied to the surface of masonry are effective, and smaller concentrations may be employed in integral mix with concrete. It makes limestone and gypsum water repellent where other silicones are ineffective. Texture, adhesion, and washability of water base paints may also be improved by the addition of small concentrations.

Cotton or rayon dipped in dilute SC-50 solutions (2% silicone) attain spray ratings of 90 under ambient temperature curing conditions. (Curing of some textiles at elevated temperatures with highly alkaline silicone may result in reduction of

fiber strength.) Padding at moderate pressure (50 psi, for example), and rinsing the treated textile in water to remove salts of reaction are both helpful in obtaining good results. Treatment is extremely resistant to dry cleaning and shows good resistance to laundering.

A nearly neutral solution of SC-50 shows promise on nylon and other fibers which do not respond to conventional treatment. Such a solution may be prepared by adding 10 parts of water to 1 part SC-50 by weight, and then stirring in aluminum nitrate to a phenolphthalein endpoint, and until a clear solution is obtained. This neutralized solution has limited storage stability and should be used within 2 weeks.

Various types of paper and paperboard have been dipped in dilute SC-50 (2% silicone) and padded at 20 psi. After 24-hr air drying period (no washing or high temperature curing), samples were given the water immersion test (TAPPI), except for longer immersion time. Results follow:

Material	Water Absorption in 1 hr, %	
	Untreated	SC-50 Treated
Blotting paper	275	59
Mist boxboard	175	57
News boxboard	184	73

SC-50 is also useful in making many powdered materials water repellent. Water repellent silica aerogels are made by coprecipitation of sodium silicate and sodium methyl silicate with acids.

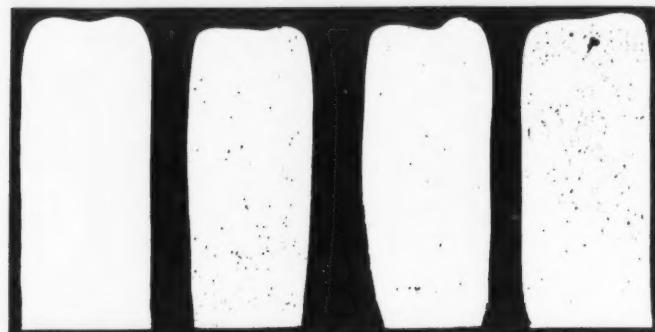
PROPERTIES OF SC-50 WATER-SOLUBLE SILICONE

Weight, lb/gal	10.3
Specific gravity	1.23-1.25
Viscosity (100°F), centistokes	5-7
pH (approx)	13
Total solids content, %	31.2 ± 2.8
Basic solids (as Na_2O), %	9.5 ± 0.5
Silicone solids (as $\text{CH}_3\text{SiO}_{1.5}$), %	20.0 ± 0.5
Impurities	
NaCl (max), %	2.0
Na_2CO_3 (max), %	1.5
Iron (max), ppm	30
Solvent	water
Diluent	water, methanol, ethanol, (hard water satisfactory)
Color (Gardner), max	3

(SC-50 water-soluble silicone is being produced in experimental quantities at GE's Waterford, N. Y. plant. Chemical Division, General Electric Company, Dept. CP, Pittsfield, Mass. . . or for more information check CP 3484 on handy form, pages 2 and 3.)

EFFECT OF EXPOSURE ON SOYBEAN OIL ALKYD RESIN ENAMELS Six Months in Atlas Weatherometer

Glyceryl IPA 67% oil Glyceryl PA 57% oil Penta modified PA 65% oil Maleic Modified PA 65% oil



Promising As Raw Material Source for Paints, Plastics, Synthetic Fibers and Films

Although isophthalic acid is now being made on a pilot plant scale, it may become increasingly available through derivation from meta-xylene

B ECAUSE of the properties exhibited by materials prepared from it and because of certain desirable reaction characteristics, isophthalic acid is a likely raw material for new or improved paints, plastics, and synthetic films and fibers. First part of three-part description that follows covers results obtained in experimentation on applications by manufacturer with his own grade of isophthalic acid.

Applications

Oil-Modified Alkyd Resins

Isophthalic acid serves as an excellent raw material for the preparation of oil-modified alkyd resins. Compared to phthalic anhydride, it has a very low volatility in the alkyd kettle — thus reducing acid losses considerably and permitting the use of higher temperature during cooking. Excellent heat stability characterizes the prepared alkyd resins which may be cooked at oil bodying temperatures of 580-600°F without more than normal oil decomposition.

An exposure test of white enamels prepared from four soybean oil alkyd resins demonstrates that superior durability may be obtained by use of isophthalic acid in conventional formulations. An accompanying photograph of panels taken after six months of exposure in an Atlas Weather-O-Meter shows considerable breakdown of two glyceryl o-phthalate resins and some breakdown of a pentaerythritol o-phthalate resin. The resin prepared from glyceryl isophthalate shows no cracking, flaking or checking. Alkyd resins of medium and short oil lengths can also be made

from isophthalic acid. Resins containing more than about 40% glycerol isophthalate and normal amounts of excess glycerol will gel at high acid numbers.

However, it is possible to reduce the oil content to less than 60% by reducing the functionality of the composition. This can be done by increasing the excess polyhydric alcohol content, by controlling gelation with benzoic acid, or by replacing part of the polyhydric alcohol with ethylene glycol. In fact, by use of the latter compound, oil modified alkyl resins of any oil length desired may be prepared.

The fast drying properties and excellent durability of alkyl resins prepared from isophthalic acid and the high resin viscosities that can be obtained by the use of this acid permit the development of new fast drying alkyl resin products of longer oil length than the present practice with phthalic anhydride. Varnishes, enamels, and paints made from isophthalic acid alkyl compositions are exceptionally stable with respect to viscosity changes during shelf storage, which indicates less reactivity with pigments such as zinc oxide. Because of the faster drying characteristics of isophthalic alkyls, it is possible to reduce the amount of driers customarily used in alkyl paints.

Alkyd Oils

Because of its good heat stability and the fast bodying and rapid drying characteristics of the isophthalic oils, isophthalic acid is an excellent material in the preparation of alkyl oils. Some desirable properties of alkyl oils prepared from isophthalic acid are: stability against undesirable viscosity increases in the presence of reactive pigments, retain good color at high temperature, and improve in drying time as viscosity increases. These properties suggest the production of extremely long oil length alkyls for applications such as printing inks and architectural finishes.

Plasticizer Esters

Isophthalic acid may be esterified readily by the same techniques used for the preparation of phthalic anhydride esters. The over-all esterification rate of isophthalic acid is greater than that of phthalic anhydride — resulting from the fact that while the half-ester formation is slower with isophthalic acid, the diester formation proceeds much more rapidly.

Unsaturated Polyesters

Ethylene glycol isophthalate polymer of high molecular weight is a tough resin with a softening point of about 140°F which is much higher than obtained from a polymer of ethylene glycol o-phthalate. Softening point of 140°F may be increased by modification of the polymer to introduce reactive double bonds.

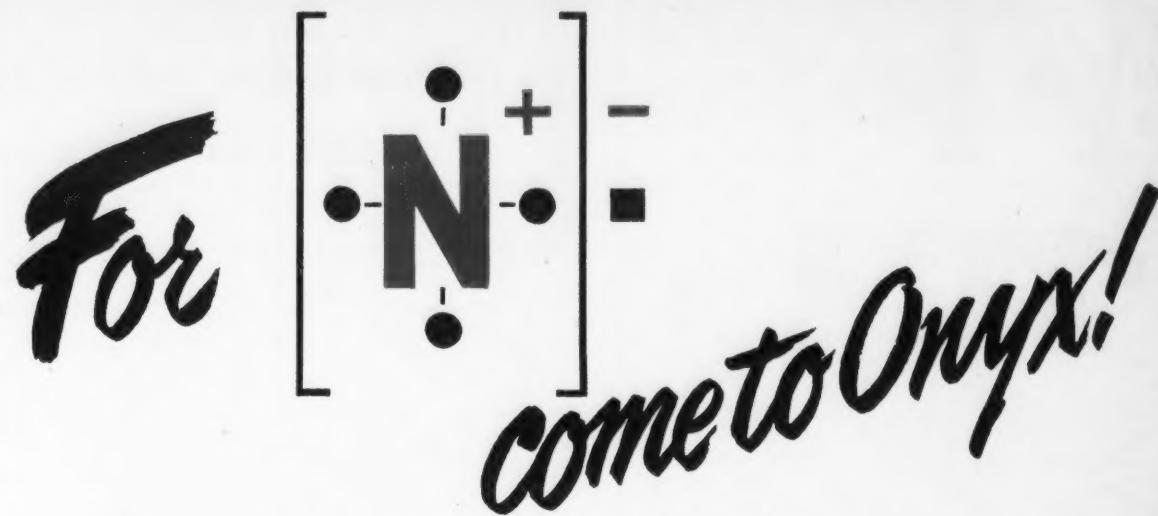
Isophthalic acid is an excellent raw material for the preparation of fumaric or maleic modified unsaturated polyesters with various glycols. These, when dissolved in monomers such as diallyl phthalate, diallyl isophthalate, allyl benzoate, styrene, and other vinyl compounds, yield resins ideal for preparation of glass-reinforced plastics.

Unsaturated polyesters made from isophthalic acid are also useful as peroxide catlyzable plasticizers for polyvinyl chloride resins, yielding leather-like products of high quality.

Polyamide Resins

Polyamide resins of excellent toughness and impact strength, which have softening points within the range required for industrial molding resins, can be made from isophthalic acid.

(Continued on page 22)



Onyx has always been a leading factor in the production of quaternary ammonium compounds. Onyx BTC . . . alkyl dimethyl benzyl ammonium chloride . . . is the most widely used cationic bactericide and deodorant. But Onyx makes many other "quats" — a greater variety than any other manufacturer.

One or more of these Onyx quaternaries may be what you have been looking for to provide certain fungicidal, algaecidal or specific bactericidal properties in one of your products. Some of the Onyx "quats" are of primary interest to research departments. Some, indeed, are available at the present time only in research quantities. But most of them are

of definite interest to many manufacturers of disinfectants, deodorants, sanitation and cleaning chemicals. Three, in addition to Onyx BTC, have very clean-cut fields of application. The four quaternaries listed on this page, moreover, have been specifically tested by a well known scientific laboratory for toxicity and irritation, and have been found to be completely safe at all recommended use-dilutions.

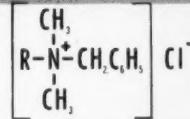
THIS MANUAL COVERS THE BASIC "QUAT" STORY. It is centered on Onyx BTC, but the basic data on quaternary ammonium compounds is also included. Write for a copy.



4

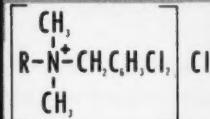
FIELD-ACCEPTED ONYX QUATERNARIES

BTC*



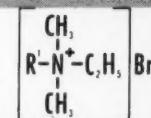
Alkyl dimethyl benzyl ammonium chloride. The leading "quat" for disinfecting, sanitizing and deodorizing properties. Sold in 50% aqueous solution to manufacturers for dilution and/or incorporation into their own line of products.

TETROSAN



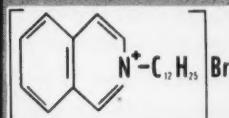
Alkyl dimethyl 3,4 dichloro benzyl ammonium chloride, plus alkyl dimethyl ethyl ammonium bromide. In extensive use as a disinfecting, deodorizing and preventive antiseptic in veterinary and livestock medicines. Also used in pharmaceuticals for topical applications. Sold in 60% aqueous solution.

ONYXIDE*



Alkenyl dimethyl ethyl ammonium bromide. The most effective algaecide now available. In wide use in swimming pools, cooling water, air-conditioning systems, etc. Sold as a 75% concentrate in isopropanol or propylene glycol.

ISOTHAN Q15*



Lauryl isoquinolinium bromide. An excellent fungicide. Widely used in the formulation of compounds for use in the control of athlete's foot and dandruff. Sold in 20% aqueous solution.



ONYX OIL & CHEMICAL COMPANY INDUSTRIAL DIVISION

184 WARREN ST., JERSEY CITY 2, N. J.

CHICAGO • BOSTON • CHARLOTTE • ATLANTA

In Canada: Onyx Oil & Chemical Co., Ltd., Montreal, Toronto, St. Johns, Que. For Export: Onyx International, Jersey City 2, N. J.
West Coast Representative: E. S. Browning Co., San Francisco, Los Angeles

When inquiring check CP 3485 on handy form, pgs. 2-3



Typical pipes and fittings of nonplasticized polyvinyl chlorides fabricated to specifications by Van Dorn.

Van Dorn

INDUSTRIAL PLASTICS OFFER YOU—

- ✓ High Resistance to Acids & Alkalies
- ✓ Tensile Strength of Aluminum, with one-half its weight
- ✓ Readily Formed, Machined, Drawn Molded or Welded

AVAILABLE FORMS

SHEETS . . . $\frac{1}{32}$ " through 1"
 PIPE . . . $\frac{1}{2}$ " through 4" diameter (10 ft. lengths)
 ROUND BARS $\frac{1}{4}$ " through 2" diameter (10 ft. lengths)
 WELDING ROD $\frac{1}{8}$ " and $\frac{3}{16}$ " diameter

TYPICAL APPLICATIONS

Van Dorn fabricates its rigid nonplasticized polyvinyl chlorides into such products as: Ducts, Hoods, Chemical Tanks, Tank Liners, Plating Racks, Fume Stacks and Piping.

WRITE FOR ILLUSTRATED BULLETIN AND SPECIFICATIONS

INDUSTRIAL PLASTICS DIVISION

THE VAN DORN IRON WORKS CO.

2681 East 79th Street • Cleveland 4, Ohio

When inquiring check CP 3486 on handy form, pgs. 2-3

High oxidation stability of vegetable oleic acid is coupled with bland odor, light color

..... Commercially available product consists of mono-unsaturated acids, and has iodine value corresponding to oleic acid

USES: Excellent for manufacture of high-quality soaps where an oleic acid of vegetable origin is preferred. Soda and potash soaps are light in color (pale yellow), practically odorless, and highly stable. This fatty acid may be used instead of olive oil or olive oil fatty acids in soap-making.

Bland odor makes product particularly suited for use in carbon paper and inked ribbon formulations that call for oleic acid. Another application is in synthetic rubber polymerization. Soda and potash soaps have the high degree of solubility necessary for satisfactory polymerization at low temperatures.

Features: Emersol 240 Vegetable Elaine is a liquid vegetable fatty acid consisting almost entirely of mono-unsaturated acids, and an iodine value corresponding to oleic acid. Commercially available material has a bland odor, light color, and excellent oxidation stability. Stability and bland odor are not only important in the material itself but are passed on to end products, as well. For instance, a potash liquid soap made with 240 has retained its bland initial odor after two years of storage.

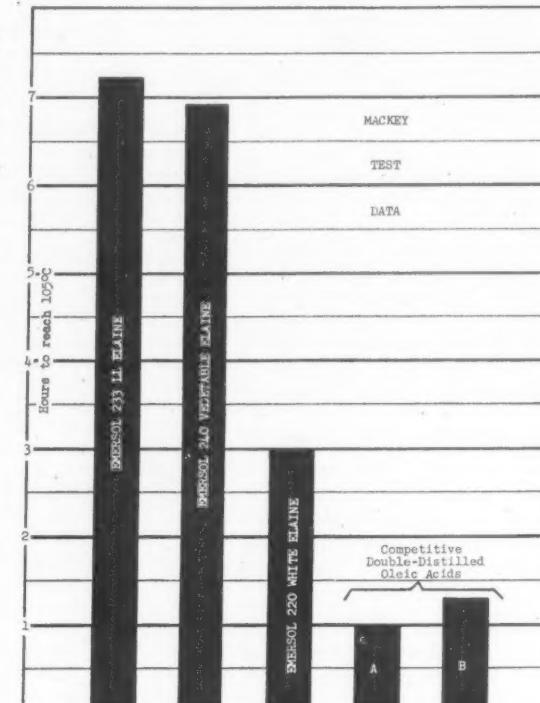
Description: Tentative specifications are:

Titer, °C	15-20
Iodine Value	84-90
Free fatty acid, % as oleic	96-98
Acid value	191-195
Saponification value	192-196
Color, Lovibond $5\frac{1}{4}$ " cell, max	15Y/3R
Unsaponifiable, max %	3.5
Polyunsaturates, max %	8.5

After heating for one hour at 205°C, in air and in $5\frac{1}{4}$ " Lovibond cell, the color is 60Y/23R. This is a high color stability for an oleic acid.

Spectrophotometric analysis of a typical sample shows a total polyunsaturate content of 7.9%, 2.2% of which is linoleic acid (9,12-octadecadienoic) and the remaining 5.7% conjugated dienoic acids. Acids containing more than two double bonds are not present. The balance is essentially mono-unsaturated acids.

Liquid soaps of Emersol 240 show good clarity at near-freezing temperatures, typical of oleic acid soaps.



Excellent oxidation stability of Emersol 240 is obvious on bar graph depicting results of Mackey test, putting 240 in a class with Emersol 233 which is one of the highest grades of oleic acid available. Emersol 220 is double-distilled grade oleic acid

For example, a 15% potash soap was held for 48 hours at 34°F without precipitation or development of cloudiness. Low-viscosity liquid soaps are easily prepared, and remain completely fluid up to 21% real soap concentration (neutral potash soap).

(Product of Dept. 5, Emery Industries, Inc., Dept. CP, Carew Tower, Cincinnati 2, Ohio . . . or for more information check CP 3487 on handy form, pages 2 and 3.)

Water solution of wet strength resin dilutes to any conc at any temp

Reported as more economical than melamine-formaldehyde and urea resins now in use in paper mills

USES: Developed primarily for wet-strengthening paper by addition to the pulp prior to sheet formation and preferably after all fiber refinement has taken place. May be used with bleached and unbleached kraft, and

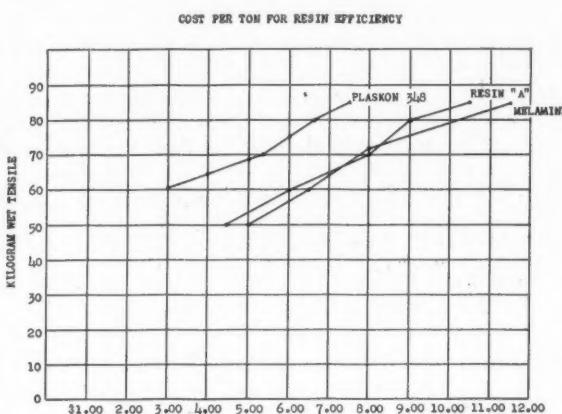
with sulfite, rag, sulfite-groundwood, and kraft-groundwood pulp.

Features: Laboratory tests and production runs have indicated that the resin develops up to 33% more wet tensile strength than equal amounts of melamine resin, and up to 25% more than equal amounts of urea resins. Since the liquid resin is infinitely dilutable with water at all temperatures, it is easily dispersed throughout the stock, by any of the standard methods of adding wet-strength resins. Since it is a cationic resin, the particles are immediately absorbed by the cellulose to assure good binding within the pulp as it is formed into sheets.

Good wet strength properties can be obtained without the use of alum; hence it is possible to obtain excellent absorbency, where desired, along with wet strength.

Description: Resin is supplied in the form of a clear, light brown water solution containing 40 to 42% solids, and having a pH of 6.8 to 7.4. Nitrogen, as measured by the Kjeldahl method, is 11.0 to 11.8. Stability is rated as at least 90 days. The material can be used as supplied or diluted to any desired concentration.

Best results are obtained by determining optimum usage in each individual case through experimentation. However, the following may be used as a rough guide.



Quantity of resin will vary with the degree of wet strength desired. Usual concentrations range from less than 0.5 to about 5%, based on dry pulp. Economic and efficient wet strength can be developed by using 0.5 to 3% resin, based on dry pulp. The graph tells the story of performance characteristics.

A pH of 4.0 to 4.5 is recommended for best results, but good wet strength can be obtained by the usual alum addition. However, excellent wet strength can be obtained through the use of dilute sulfuric acid or mixtures of sulfuric acid and alum.

(Aminoplast 348-11L is made by Plaskon Division, Libbey-Owens-Ford Glass Co., Dept. CP, Toledo 6, Ohio . . . or for more information check CP 3488 on handy form, pages 2 and 3.)

Uses of magnesium dock boards

Four-page bulletin illustrates various loading operations with magnesium dock board and with combination of board and magnesium ramp. Equipment is constructed of magnesium alloy and is reported to weigh 1/3 as much as comparable steel equipment. Photographs show equipment being used in loading trucks, boxcars, warehouses, and platform loading. Bul DB-204 is issued by Magline, Inc., Dept. CP, Pinconning, Mich. When inquiring specify CP 3489 on handy form, pages 2 and 3.

WHAT DO YOU
KNOW ABOUT



Sodium can be dispersed in both aliphatic and aromatic hydrocarbons.

TRUE FALSE



Sodium Dispersions are supplied in tank cars.

TRUE FALSE



The use of these dispersions is limited to large scale operations.

TRUE FALSE



Sodium Dispersions will give increased yields.

TRUE FALSE



Sodium Dispersions are inexpensive to use.

TRUE FALSE



Sodium is available for use in new applications.

TRUE FALSE



National Distillers Chemical Co.
DIVISION OF NATIONAL DISTILLERS PRODUCTS CORPORATION

When inquiring check CP 3490 on handy form, pgs. 2-3

Sodium Dispersions?

Sodium Dispersions are stable suspensions of microscopic sodium particles (5 - 15 microns) in inert hydrocarbon media with boiling points above the melting point of Sodium (97.5° C.). The commercial use of this tremendously reactive form of sodium was made possible by new techniques in sodium chemistry developed in our laboratories. The following questions are those most asked about Sodium Dispersions. The answers may enhance your own knowledge of the subject.

For descriptive literature, please address your inquiries to the National Distillers Chemical Co., Ashtabula, Ohio.

True: Sodium can be dispersed readily in any organic compound inert to sodium and having a boiling point above the melting point of sodium. Typical media: toluene, kerosene, xylene, mineral spirits, diethyl ether of ethylene glycol.

False: Most Sodium Dispersions are formulated for specific applications. For this reason and since the dispersing medium generally will be re-used, it is desirable to produce the dispersion at the point of use. However, dispersions are easy to make in simple mixing equipment from laboratory to plant scale. National Distillers Chemical can supply complete knowhow on making Sodium Dispersions.

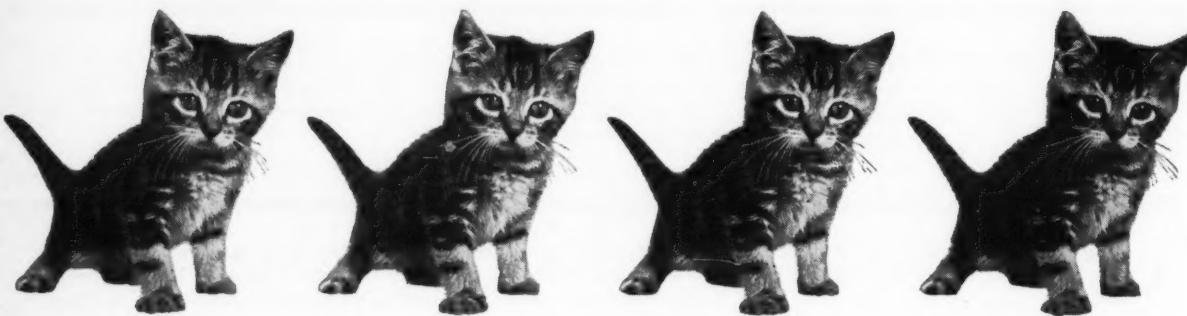
False: Simple and inexpensive equipment is commercially available for the laboratory, pilot plant or plant scale preparation of sodium dispersions. In many cases existing equipment can be adapted for the preparation of dispersions.

True: Sodium in dispersed form is far more reactive than massive sodium and makes possible shorter reaction times at lower temperatures for many processes, giving higher yields and fewer side products.

True: For pilot plant and plant operations generally the cost of processing sodium into this form is only 1/2¢ to 3¢ per pound above the original cost of the sodium. Since dispersion preparation is easy for both large and small requirements, the cost is largely influenced by equipment capacity versus frequency of use. Process savings in labor, raw materials and other operating expenses generally more than offset this cost.

True: National Distillers Chemical Co. can assure you of a stable long-term supply of sodium. Sodium metal is available in steel barrels as 1, 2½, 5 and 12 pound bricks and in tank cars holding 80,000 pounds net. Special 20 pound packages of 1 and 2 pound bricks are also available. The plant and sales offices are located at Ashtabula, Ohio.

What do kittens have in common with Barrett* Coal-Tar Chemicals?



Uniformity, of course. It's basic.

When you buy coal-tar chemicals, you need uniformity at a high level of quality.

When you buy from Barrett, you get uniform quality resulting from BARRETT'S BASIC POSITION IN RAW MATERIALS and NEARLY 100 YEARS OF COAL-TAR CHEMICAL RESEARCH AND DEVELOPMENT:

Barrett is Basic
...in your business

Barrett Coal-Tar Chemicals

*Phenols
Cresols
Cresylic Acids
Xylenols
Pickling Inhibitors
Benzol
Toluol
Xylol
Naphthalene
Hi-Flash Solvent
Phthalic Anhydride
Dibutyl Phthalate
ELASTEX® DCHP Plasticizer
"ELASTEX" 10-P Plasticizer—
(DIOP)
"ELASTEX" 50-B® Plasticizer
"ELASTEX" 28-P Plasticizer—
(DOP)
Phenolic Resins
Niacin (Nicotinic Acid)
Pyridines
Picolines
Quinoline*

*Lutidines
Tar Acid Oils
Neutral Coal-tar Oils
Coal-tar Creosote
CUMAR® Paracoumarone-
Indene Resin
Carbonez® Rubber Compounding
Hydrocarbon
Bardol® Rubber Compounding Oil
Flotation Agents*



THE BARRETT DIVISION
ALLIED CHEMICAL & DYE CORPORATION
40 RECTOR STREET, NEW YORK 6, N. Y.

*Reg. U. S. Pat. Off.

In Canada: The Barrett Co., Ltd., 5551 St. Hubert St., Montreal, Que.

When inquiring check CP 3491 on handy form, pgs. 2-3

MATERIALS

(Continued from page 19)

Reaction Characteristics

Isophthalic acid reacts readily with alcohols and amines to form esters and amides. Polyesters and polyamides of high molecular weight are easily formed by reacting the acid with various diols and diamines.

In esterification reactions, isophthalic acid reacts quickly when the temperature is high enough to give the required solubility in the reaction mixture. Reaction is rapid at a temperature of 445°F or higher, but 390°F is satisfactory with good solvents, such as ethylene or diethylene glycols. Conventional catalysts, such as p-toluenesulfonic acid, increase the rate of esterification.

Half-esters of isophthalic acid have excellent heat stability. Decomposition such as is common with half-esters of phthalic anhydride does not occur, even at temperatures as high as 570°F.

Properties

Oronite Chemical Co.'s isophthalic acid is a white crystalline product, soluble in acetic acid, slightly soluble in acetone and ethyl alcohol, sparingly soluble in water, and insoluble in benzene and petroleum spirits. Technical grade of Oronite isophthalic acid contains approximately 85-90% isophthalic acid and 10-15% terephthalic acid (the para isomer).

In the preparation of alkyd resins and other polyester products both constituents are active, and the resultant products are essentially identical with those derived from pure isophthalic acid.

Typical inspections of Oronite isophthalic acid are shown:

Melting point (closed tube), °F	660
Acid number, mgm KOH/gm	674
Iron, %	0.0003
Water	trace

660
674
0.0003
trace

Availability is on a pilot-plant scale at present, although it may be prepared on a large scale from meta-xylene.

(Product of Oronite Chemical Co., Dept. CP, 38 Sansome St., San Francisco 4, Calif. . . or for more information check CP 3492 on handy form, pages 2 and 3.)

Last volume now available of essential oil series

Present volume — the sixth — completes a work dealing with essential oils. With the exception of one chapter, the sixth volume was written by Dr. Ernest Guenther of Fritzsche Brothers, Inc., New York. Like the third, fourth, and fifth volumes, it is composed of monographs describing the production, physiochemical properties, chemical composition, and uses of individual oils.

In the volume's 481 pages will be found oils of particular interest to the pharmaceutical, flavor, and perfume industries, such as: wintergreen, sweet birch, valerian, mustard, onion, hops, wormseed, juniper, laudanum, and oak moss. A large section of the volume is devoted to the pine oils, which, of course, are of special interest to manufacturers of soaps, disinfectants, sprays, etc.

An authoritative and detailed chapter by Dr. Leo Goldblatt of Naval Stores Research Division, US Department of Agriculture, deals with the turpentine and related oils of the American Naval Stores industries. To obtain "The Essential Oils, Vol VI," remit \$9.75 direct to D. Van Nostrand Co., Inc., Dept. CP, 250 Fourth Ave., New York 3, N. Y. When inquiring specify CP 3493 on handy form, pages 2 and 3.

MATERIALS

Films are noted for water resistance and clarity . . .

emulsion exhibits have high degree of polymerization

Uses: Emulsion used in manufacture of protective and decorative coatings for use on concrete, wood, or plaster.

Features: Small particle size, low viscosity, high degree of polymerization, as well as good compounding stability.

Description: Gelva Emulsion TS-22 is a free-filming emulsion which forms irreversible coatings. Its films are noted for their clarity and water resistance.

General properties are:

Total solids, %	55 min
Emulsion viscosity, poises	1-3
Monomer conc, %	1.0 max
Acidity, as AcOH	0.3 max
pH, approx	3.5-5.5
Particle size, micron	0.5-1.0

(Product of Shawinigan Products Corp., Dept. CP, 350 Fifth Ave., New York 1, N. Y. . . or for more information check CP 3494 on handy form, pages 2 and 3.)

Behavior of metals at low temp

Government publication presents results of studies conducted both in industry and in government to further knowledge of mechanical properties of metals at low temperatures.

Information is reported to be vital to an understanding of their fundamental rheological properties. Work was initially presented at symposium sponsored by NBS.

Papers included in volume cover recent European work in field. Among subjects offered in report are development and application of chromium-copper-nickel steel, and tensile properties of copper, nickel, and some copper-nickel alloys.

Also in the discussion are surveys of mechanical properties of high-purity iron-carbon alloys at low temperatures, dimensional effects in fracture, and brittle fractures in ship plates.

To obtain "Mechanical Properties of Metals at Low Temperatures," remit \$1.50 direct to Government Printing Office, Washington 25, D. C.

For more information on product at right, specify CP 3495
see information request blank between pages 2-3.



ONE JUMP AHEAD

research to explore the potentialities of its present products and to develop allied products to serve its customers...this is the secret of NIAGARA'S position among the leading producers of quality electro-chemicals.

NIAALK®
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Liquid Chlorine
Caustic Potash
Carbonate of Potash
Paradichlorobenzene
Caustic Soda
TRICHLOROethylene
(Tetrachloro Phthalic Anhydride)



NIAGARA ALKALI COMPANY

60 East 42nd Street, New York 17, N. Y.

DAVISON PRODUCES SPECIAL OXIDATION CATALYST

**Yields Increased . . . Costs Lowered . . .
Complete Restriction of Information**

For a two year period a manufacturer had worked on the problem of developing an oxidation catalyst for their own use. Their basic research was presented to a Davison Field Service Engineer as a laboratory prescription. This material was completely and confidentially coordinated with Davison's Technical Service and Research Departments. Pilot plant samples were manufactured enabling further research to be accomplished on the manufacture of the catalyst. Top men in the catalyst field worked on the development of this oxidation catalyst and after six months it was manufactured for large scale commercial use.

Because of Davison's modern facilities and extensive experience, the oxidation catalyst was produced at greatly reduced cost yet provided top yields. At no time was restricted information in danger of being divulged.

This is an example of how Davison's specialty catalyst development and production works. If you have a catalyst problem, contact the Davison Field Service Engineer. You can rely on Davison to work with you, confidentially.

Progress Through Chemistry

THE DAVISON CHEMICAL CORPORATION

PRODUCERS OF: CATALYSTS, INORGANIC ACIDS, SUPERPHOSPHATES, PHOSPHATE ROCK, SILICA GELS, SILICOFLUORIDES AND FERTILIZERS

When inquiring check CP 3496 on handy form, pgs. 2-3

MATERIALS

Report better reinforcement of rubber tread stocks than from HAF blacks . . .

natural and synthetic stocks show higher tensile and hardness, lower rebound and Log R, with SAF black

Uses: Carbon black imparting high abrasion resistance and reinforcement for both natural and synthetic rubber stocks. Especially recommended for manufacture of heavy-duty passenger, bus, and truck tires.

Features: Reported to provide abrasion resistance and reinforcement exceeding that provided by HAF blacks.

Description: In natural and synthetic rubbers Statex 125 shows higher tensile and hardness with lower rebound and Log R as compared with HAF carbon — indications of its finer particle size. Modulus is of the same order as for HAF carbons. A comparison of suitably compounded Statex 125 with HAF carbons in cold GR-S (LPT) and natural rubber for factory processability indicates approximate equality as regards mixing temperatures and viscosities developed. Curing rate and under cure set-up for the compounds with Statex 125 are almost identical with HAF carbon. Laboratory data suggest the possibility that Statex 125 in oil extended polymer may lead to lower cost treads at equal or improved wear.

RECIPES			
Cold GR-S Treads		Natural Rubber Treads	
Cold GR-S (LTP)	100	Smoked Sheets	100
Statex 125 SAF Carbon		Statex 125 SAF Carbon	
Black	50	Black	45
Zinc Oxide	3.5	Peptizer	0.5
Stearic Acid	2.0	Zinc Oxide	3.0
Softener	15.0	Stearic Acid	2.0
Retarder	0.2	Softener	3.5
Antioxidant	1.0	Retarder	0.5
Benzothiazyl Sulfenamide	1.0	Antioxidant	1.0
Sulfur	1.8	Benzothiazyl Sulfenamide	0.55
		Sulfur	2.55

PROCESSING DATA			
Cold GR-S		Natural Rubber	
Masterbatch	305°F, 5.5' @ 20 rpm	320°F, 5.5' @ 40 rpm	
Remill MB	285°F, 5.5' @ 20 rpm		
Finishing	280°F, 3.5' @ 20 rpm	230°F, 2.5' @ 20 rpm	
Extrusion	300°F, 7.60x15 Caps	250°F, 10.000x22 Treads	

PHYSICAL PROPERTIES OF EXTRUDED STOCKS			
Cold GR-S (Cure @ 292°F)	Natural Rubber (Cure @ 290°F)	60'	30'
Modulus @ 300%, psi	1350	1410	1580
Modulus @ 500%, psi	2675	2790	3410
Tensile, psi	3310	3240	4320
Elongation, %	585	555	590
Shore Hardness	57	58	59
Rebound (G-H), %	53.9	54.4	47
Log R	3.3	3.6	2.2
			2.4

(Statex 125 Super Abrasion Furnace carbon black is manufactured by the Columbian Carbon Company and distributed by Binney & Smith Company, Dept. CP, 41 East 42nd Street, New York 17, N. Y. . . or for more information check CP 3497 on handy form, pages 2 & 3.)

Test results show weldability of aluminum bronze sheets

Twelve-page booklet is reprint of talk on welding characteristics of aluminum bronze sheet and plate. According to report, alloy may be fabricated by such welding processes as carbon-arc, metal-arc, inert-gas metal-arc, and others. Five processes for welding aluminum bronze sheet are

MATERIALS

discussed at length. Electrode core rod and filler rod compositions are tabulated for metal- and carbon-arc processes. Various techniques in welding alloy may be used to meet specific fabrication requirements.

Although carbon-arc process is generally recommended, metal-arc welding techniques may be used for fabricating equipment where increased speed is preferred to maximum weld quality. Inert-gas metal-arc processes are said to yield dense, high-quality welds of excellent appearance. Several illustrations show commercial application of alloy in fabrication of conveyor, centrifugal separator, heat exchanger, and conveyor housing. "Welding Iron-Bearing Alpha Aluminum Bronze" is issued by Ampco Metal, Inc., Dept. CP, 1745 S. 38th St., Milwaukee 46, Wis. When inquiring specify CP 3498 on handy form, pages 2 and 3.

Can formulate cosmetics over wide pH range with new wax . . .

smooth, ivory-white product highly stable; compatible with acids, alkalis, salts

Uses: Smooth, ivory-white wax for cosmetic formulators — suitable for preparation of creams (vanishing, depilatory, cleansing, etc), shampoos, ointments and numerous specialties.

Features: Outstanding characteristic is its stability over a wide pH range, permitting formulations which include acids, alkalis, or salts.

Description: Ceramol wax is made of higher alcohols and higher alcohol sulfates. It produces extremely stable oil-in-water emulsions when compounded with relatively inexpensive oils, with or without the addition of lanolin. Such emulsions can be produced over a wide viscosity range by simple agitation.

Product does not act as an irritant or sensitizer on human skin. On the contrary, it possesses useful emollient properties.

(Samples are available from Aceto Chemical Co., Inc., Dept. CP, 82 Beaver St., New York 5, N. Y. . . or for more information check CP 3499 on handy form, pages 2 and 3.)

Advantages of coating machinery with colloidal graphite

Four-page bulletin lists several advantages of colloidal graphite over ordinary petroleum lubricants in assembly and run-in of machines. Particles in colloidal graphite are microscopic in size and electrically charged with same polarity. Mutual repulsion insures uniform suspension throughout the oil medium. Graphoid film on friction surfaces is said to be finer, denser, and tenaciously adsorbed on surface.

Use of colloidal graphite is said to result in smoother bearing surfaces, increased power from reduced friction, lower bearing temperatures, as well as reduced oil consumption.

According to report, graphoid film cuts corrosion of cylinder walls, lowers maintenance, and extends life of engines or machinery. Graphoid coating may also be applied to compressors, piston rings, valves, reduction gearing, etc.

Bul 421 is issued by Acheson Colloids Company, Division of The Acheson Industries, Inc., Dept. CP, Port Huron, Mich. When inquiring specify CP 3500 on handy form, pages 2 and 3.

JULY, 1952

Dependable Source For Chemical Raw Materials



"Wyandotte Krelon has good sudsing characteristics and solubility"

—says L. Carlton Mertz, Chicago, Illinois

BULLETIN BOARD

Dicol*:

This mixture of diglycols, predominantly diethylene glycol, has shown outstanding efficiency in plasticizing and humectant applications . . . plus up to 20% savings! Write for samples, data.

Caustic Soda:

Some cleaning compound manufacturers are finding that powdered caustic has some advantages over flake. Since other ingredients are powdered or fine-granular, a dust-suppressing oil is needed anyway; and the powdered caustic does not tend to segregate. Ask for trial quantity.

Carboso*:

Raw-material cost reductions of up to 50% have resulted from the use of this Na CMC, according to field reports. In tests, as little as 1% Carboso has increased soil removal and whiteness retention as much as 10-40% in various formulations. Ask for samples.

"We've been in the cleaning compound business for more than 21 years," says Mr. Mertz, owner of L. Carlton Mertz Company, Chicago.

"Today, we make more than 100 products for dairy cleaning, metal fabricating and processing, and general maintenance work.

"To maintain our quality and keep pace with the industry, we make a constant check on all of our sources of supply.

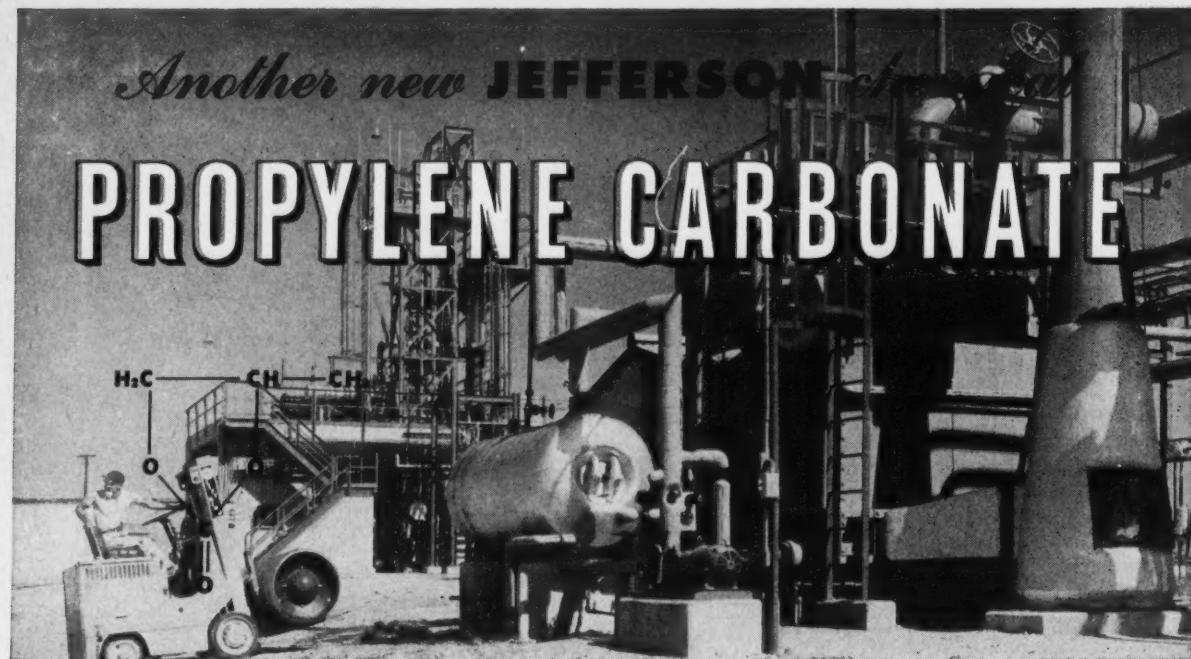
"We find new, improved WYANDOTTE KRELON has good sudsing characteristics and rapid solubility—is very satisfactory for our purposes. We use it in a number of our quality detergents."

Have you tried our improved WYANDOTTE KRELON*? Its characteristics may be helpful to your products, speed your process, or cut your over-all cleaning costs. Send for a FREE sample, and a copy of our new 28-page book. It contains complete data. *Wyandotte Chemicals Corporation, Wyandotte, Michigan. Offices in Principal Cities.*

*REG. U. S. PAT. OFF.

 **Wyandotte**
CHEMICALS
HEADQUARTERS FOR ALKALIES

When inquiring check CP 3501 on handy form, pgs. 2-3



now available in pilot-plant quantities

Properties of a typical sample of Jefferson's Propylene Carbonate are:

Boiling point, °C	242
Freezing point, °C	-45
Flash point (open cup), °F	270
Refractive index at 20°C	1.4209
Specific gravity, 20/4 °C	1.2057
Appearance	Mobile water-white liquid
Viscosity, centistokes	
at -40°F	19.4
at 100°F	1.67
at 210°F	0.78

Suggested Applications:

hydraulic fluids
solvent and selective solvent
chemical intermediate
hydroxypropylating agent

You may obtain technical information and experimental samples* for research and development by writing to our Market Development Division, Dept. D.

★ Ethylene Carbonate samples and data are also available.

Essential Chemicals From Hydrocarbon Sources:

Ethylene Oxide
Ethylene Glycol
Ethylene Dichloride
Diethylene Glycol
Monoethanolamine
Diethanolamine
Triethanolamine

Jefferson
CHEMICAL COMPANY, INC.

260 MADISON AVENUE, NEW YORK 16, N. Y.



When inquiring check CP 3502 on handy form, pgs. 2-3

MATERIALS

Offer different viscosities and degree of hydrolysis in polyvinyl alcohols . . .

both completely and partially hydrolyzed products available in high, medium, and low viscosity

Company is manufacturing six standardized grades of polyvinyl alcohol under the trade name, "Lemol". They differ from each other in viscosity and degree of hydrolysis. Following description will cover the applications indicated for the compounds.

High viscosity and completely hydrolyzed Lemols are suitable for compounding with polyvinyl acetate emulsions for waterproof adhesives, thickening agents, laminating adhesives, saturants for high strength paper, grease resistant paper coatings, and unsupported film. Also, for gasoline, oil and grease proof gaskets.

Medium viscosity, completely hydrolyzed Lemols are particularly recommended for unsupported film, and grease proof barrier and solvent resistant gasket stock. May be used in temporary protective coatings, as binder for pigmented paper coatings, and as surface sizing for paper.

Also available are low viscosity, completely hydrolyzed Lemols which permit higher working concentrations. High viscosity, partially hydrolyzed Lemols are applicable as protective colloids, emulsifying agents, thickening agents, and extenders for polyvinyl acetate emulsions.

Medium viscosity, partially hydrolyzed Lemols permit higher working concentrations than other types as protective colloids, emulsifying agents, thickening agents, remoistenable adhesives, water soluble unsupported films and temporary protective coatings.

Then there is the most water sensitive grade, a low viscosity partially hydrolyzed Lemol for use as an emulsifying agent, remoistenable adhesive, and warp size for acetate and nylon yarns.

The Lemols provide tough, water soluble resins combining high tensile strength, adhesiveness and tear-resistance with extreme inertness to aging, oxidation, and bacterial action.

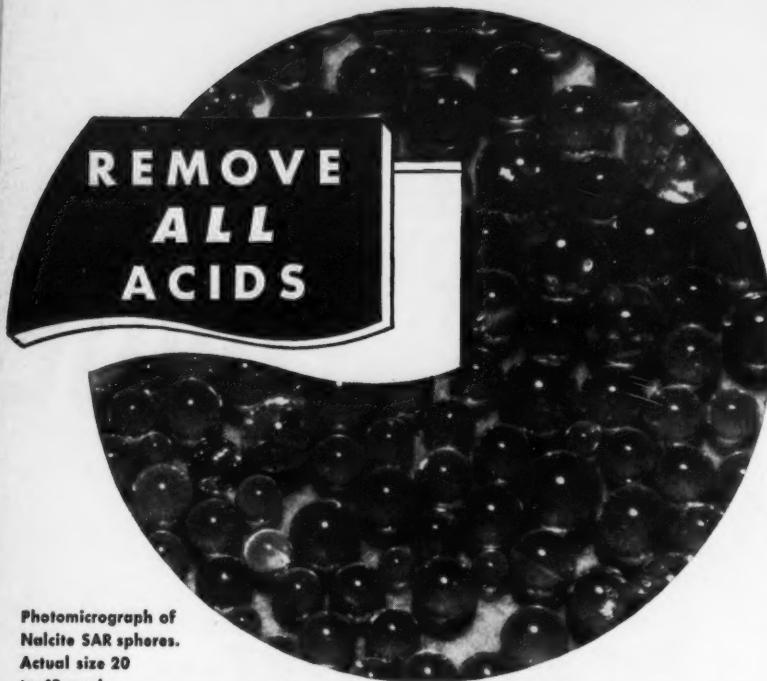
(Products of American Monomer Corp., Dept. CP, Leominster, Mass. . . or for more information check CP 3503 on handy form, pages 2 and 3.)

Materials made from oil and gas receive greater emphasis

Fourth edition of "Unit Processes in Organic Synthesis" gives additional stress to production of aliphatic compounds from petroleum and natural gas. In 950 pages, text presents industrial technic in converting organic raw materials into usable products. It is designed to facilitate transition from university classroom to an industrial environment.

Kinetics and thermodynamics in development of chemical operations has been considered more extensively in revision. A chapter has been added dealing with the Oxo reaction, originally developed in Germany for manufacture of liquid fuels and chemicals from coal. Extensive use is made of information obtained from intelligence reports from World War II. Greater weight is given to economics of production. Extensive use of flow diagrams, drawings, photographs, and charts help to make book a valuable tool for training of chemical engineers.

To obtain "Unit Processes in Organic Synthesis, 4th Edition" remit \$12.50 direct to McGraw-Hill Book Company, 327 West 41st St., New York 18, N. Y.



Photomicrograph of
Nalcite SAR spheres.
Actual size 20
to 40 mesh.

WITH *Nalcite*® SAR STRONGLY BASIC ANION EXCHANGE RESIN

REMOVAL of all acids, including carbonic and silicic, from water and process liquids is accomplished, without elaborate techniques or additional equipment, using Nalcite SAR strongly basic anion exchange resin.

Combining efficient anion removal and long resin life, Nalcite SAR offers new opportunities for short-cutting process techniques and assures purity of the effluent liquid.

Technical information on Nalcite SAR is contained in the bulletin described below. Bulletins on other high capacity Nalco ion exchange materials are available without obligation upon request.

TECHNICAL DATA ON *Nalcite* SAR

Complete data on Nalcite SAR properties, performance, and typical results. Includes charts, graphs, and sample calculations. 16 pages. Sent free upon request.

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When you use Nalcite resins, you take advantage of Nalco's long and broad experience in water and process technology.



When inquiring check CP 3507 on handy form, pgs. 2-3

MATERIALS

Polyester-glass molding comp'd has good flow even at very low pressures . . .

glass fibers are $\frac{3}{4}$ " long; molded pieces have superior finish and are chemically resistant

Uses: Electrical parts, switches, connectors, relay cases, and similar parts by both transfers and compression molding.

Compression molding of pieces too difficult or intricate to preform economically.

Features: Glass fibers $\frac{3}{4}$ " long, notable flow characteristics even at very low pressures, and molded pieces have superior finish.

Description: Polyester-glass molding compound consists of approximately 30% by weight of glass, and a mineral filler. Pieces have been molded at pressures ranging from 75 to 5000 psi and at temperatures from 250 to 350°F.

Molded pieces have a superior finish and are very resistant to water, acids, alkalis, and bleaching agents. Machining of pieces requires same tools and techniques as with regular polyester laminates. Some properties subject to revision with further experimentation, are:

Heat distortion point, °F	approx 300
Flexural strength, psi	17,000
Notched Izod impact strength, ft-lb/in	10
Compressive strength, psi	25,000
Flexural modulus, psi	1.7×10^6

Compound is presently available in putty form, but manufacturer expects to make it available in a drier form in near future to facilitate handling.

Molding compound is made with manufacturer's No. 382 resin which, at present, is being produced in limited quantities; however, facilities are being expanded.

(Available from Atlas Powder Co., Dept. CP, Wilmington 99, Del. . . . or for more information check CP 3508 on handy form, pages 2 and 3.)

Market two forms of synthetic soil conditioner . . .

easily soluble, highly concentrated flake type for sprinkling, and a powder form for "raking in"

Uses: To condition and stabilize the soil.

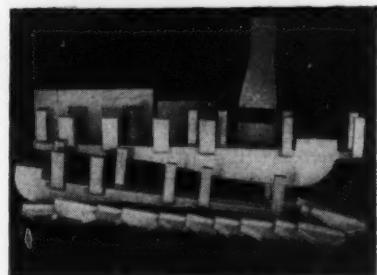
Features: Creates granular, porous soil structure with marked stability under influence of rainfall and other weather factors. Prevents surface baking or crusting of soil. Increases absorption and retention of water by soil. Controls sheet erosion.

Improves drainage and promotes aeration — both contributing to good root systems and better utilization of fertilizers. Aids in the formation of soil mulch which reduces water loss through evaporation.

Description: Sold under the brand name Aerotil, the conditioner is a hydrolyzed polyacrylonitrile. Soluble flake form contains 83% of the active ingredient and special additives to permit it to dissolve quickly in water. It is recommended for dry soil that has been thoroughly broken and prepared. Suggested mixing ratio is 1 lb of conditioner to 16 gal of water to treat an area of 200 sq ft.

Powder form contains 40% of active ingredient and contains other ingredients to allow more uniform mixing throughout the soil. It is recommended that this form be applied evenly at a rate of 1 lb for every 100

FAMOUS AVIATION COMPANY EQUIPS NEW PLANT WITH COMPLETE EXHAUST SYSTEM RESISTANT TO CORROSIVE FUMES



PLA-TANK® RESIN-BONDED FIBERGLAS®

Pictured above is but a portion of an order for PLA-TANK parts placed by a well-known aviation company for installation in their new plant. This picture shows the Exhaust Hoods complete with Ducts for a down draft exhaust system.

All of these parts, as well as many others not shown (including tanks for dips and plating solutions) were fabricated of PLA-TANK. PLA-TANK is a corrosion-resistant material, made of Fiberglas, impregnated and bonded with polyester resins. It is molded into strong, rigid units, light in weight but extremely durable. These units are resistant at temperatures from -60°F. to +280°F. PLA-TANK is not just a lining but equally resistant inside and out.

By combining standard stock units with custom fabricated parts a complete system may be developed for the transfer of your corrosive exhausts and fumes. And it may be used with corrosive liquids, too, as it is also fabricated in the form of tanks, tank linings, pipe and pipe fittings.

Data Sheets Sent on Request

**THE Chemical
CORPORATION**

63 Waltham Ave., Springfield 9, Mass.

When inquiring check CP 3509
on handy form, pgs. 2-3

CHEMICAL PROCESSING

MATERIALS

sq ft. At this rate of application, it should be raked into the soil to a depth of not more than $\frac{1}{2}$ ".

According to manufacturer, conditioner will not cause striking improvement in structure of soils which are already in good tilth as a result of organic matter additions and other good management practices.

(Aerotil is being produced by American Cyanamid Co., Dept. CP, 30 Rockefeller Plaza, New York 20, N. Y. . . or for more information check CP 3510 on handy form, pages 2 and 3.)

Stabilize detergent's foam for more effective cleaning . . .

makes product resistant to foam-killing effects of grease and other soils

Uses: High-foaming liquid detergent suitable for formulating dishwashing, carwashing, rug shampoo, and bubble bath preparations.

Features: Contains a specially developed amide-type foam stabilizer, making the copious foam produced by the detergent unusually resistant to action of grease and other soils.

Another interesting feature is the detergent's thickening-up action when water is added, making it possible to dilute the product extensively for repackaging yet still maintain viscosity. This adjustable viscosity is particularly useful in connection with faucet adapters that are designed to suck up liquid detergents when the water is turned on. With these, detergent's viscosity controls amount dispensed.

Description: Ninex 21 foam-stabilized liquid detergent is characterized by non-rusting properties, absence of odor, and resistance to freezing. It is supplied containing 60% active liquid, but can be supplied as 100% active.

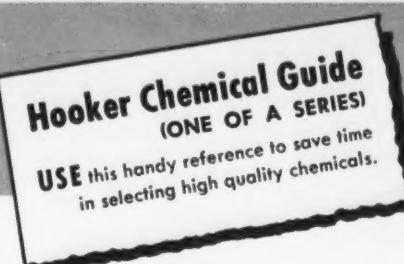
(Product of the Ninol Laboratories, Dept. CP, 1719 South Clinton Street, Chicago 16, Ill. . . or for more information check CP 3511 on handy form, pages 2 and 3.)

Contains valuable information on chemical solubilities

Data of great value to chemists may be found in 1254 pages of supplementary volume on solubilities. Volumes I and II of the 3rd edition on solubilities were published in 1940 and 1941 respectively. This supplement assembles material that has appeared in the journals during the past ten years. Advantage of this plan is that this additional information may be obtained without repurchasing main body of data. Disadvantage is that one must search through two arrangements to find a desired result.

As in main edition, material has been separated into an inorganic and an organic section, with the former appearing first. A section on ternary systems yielding two liquid layers follows. This provides the basis of a practical application of solubilities to the solution of industrial problems. Near end of book a chapter is included on recent contributions to the theory of electrolytic solubility. This reviews present state of knowledge concerning the theoretical interpretation of phenomena of solubility.

Since publication of earlier volumes, responsibility for book has been transferred to the American Chemical Society. To obtain "Solubilities of Inorganic and Organic Compounds, Supplement to the 3rd Edition" remit \$12.50 direct to D. Van Nostrand Company, Inc., Dept. CP, 250 Fourth Ave., New York, N. Y. When inquiring specify CP 3512 on handy form, pages 2 and 3.



HOOKER METALLIC CHLORIDES

USES

Catalyst: For Friedel-Crafts synthesis, isomerization, alkylation, polymerization, halogenation.

End Products: Plastics, resins, high octane gasoline, lubricants, lube additives, synthetic rubber, dyes, photographic chemicals, pharmaceuticals, etc.

Fluxing agent: For aluminum refining and aluminum casting.

ALUMINUM CHLORIDE

Formula: $AlCl_3$
Appearance: Gray crystalline solid, supplied in four standard sizes.

TYPICAL PROPERTIES

Molecular Weight	133.3
Aluminum Chloride	98.5% Min.
Sublimables in air at 950° C.	
Iron	0.05% Max.
Heat of Solution	550 small cal/gm

ANTIMONY TRICHLORIDE

Synonym: Antimongous chloride
Formula: $SbCl_3$
Appearance: Yellowish solid

TYPICAL PROPERTIES

Molecular Weight	228.1
Antimony Trichloride	99%
Iron and Arsenic	1% Max.
Lead	0%
Melting Point	73.4° C.

ARSENIC TRICHLORIDE

Synonym: Arsenous chloride
Formula: $AsCl_3$
Appearance: Clear, colorless to pale yellow liquid

TYPICAL PROPERTIES

Molecular Weight	181.3
Freezing Point	-18° C.
Boiling Point	130.5° C.
Specific Gravity, 14°/4° C.	2.163

USES

Insecticides: In the manufacture of synthetic organic.

Poison Gases: Chemicals containing arsenics for these uses.

For detailed information on items listed, drop us a note on your letterhead. Address your request to HOOKER ELECTROCHEMICAL COMPANY, 15 Forty-Seventh Street, Niagara Falls, N. Y.

HOOKER ELECTROCHEMICAL COMPANY

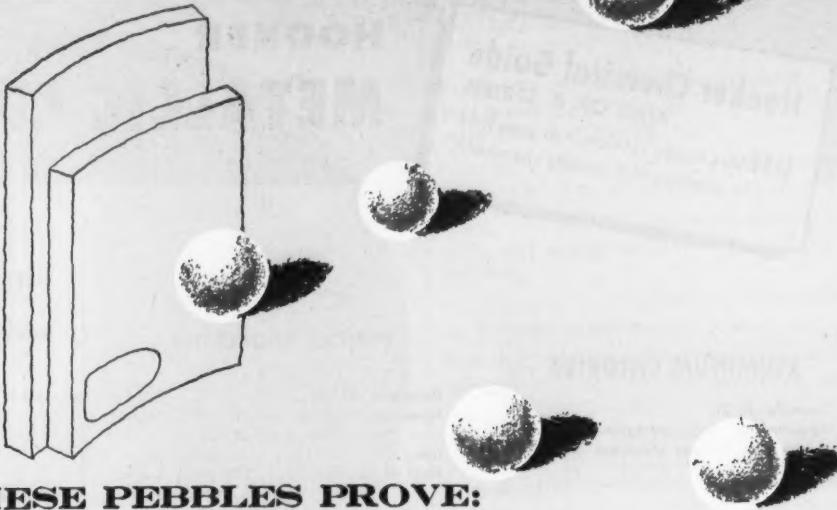
NIAGARA FALLS, N. Y. • TACOMA, WASH. • WILMINGTON, CALIF.

From the Salt of the Earth



2-134

When inquiring check CP 3513 on handy form, pgs. 2-3



THESE PEBBLES PROVE:

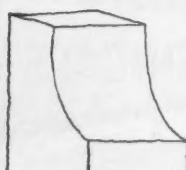
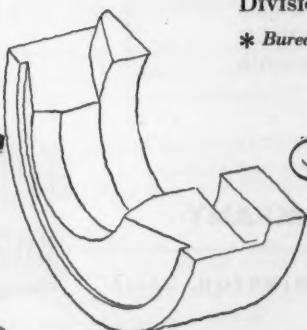
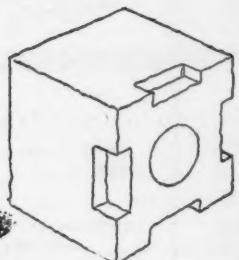
IN REFRactories ALCOA ALUMINA CAN TAKE IT

In a recent 7-month test conducted by the Bureau of Mines*, ALCOA Alumina proved it can stand up under grueling treatment. During this period, ALCOA Tabular Alumina pebbles passed through a commercial-size pebble heat exchanger. During each cycle they were alternately heated to above 2000° F. and cooled to 300°-450° F. Yet under these extreme operating conditions, the ALCOA pebbles gave excellent service and considerably out-performed other pebbles tested. They showed unusually low breakage from heat and mechanical shock as well as outstanding resistance to abrasion. These same excellent results are being attained with ALCOA Alumina pebbles in other commercial pebble heat exchangers.

Aluminum oxides in various forms are widely and successfully used for super-duty refractories . . . special cements . . . grinding balls . . . spark-plug insulators . . . and a variety of ceramic bodies. If severe operating conditions are causing you refractory problems, perhaps you can benefit from the exceptional performance record of ALCOA Aluminas. Let us show you how they can profitably apply to your business.

Write to: ALUMINUM COMPANY OF AMERICA, CHEMICALS DIVISION, 606C Gulf Building, Pittsburgh 19, Pennsylvania.

* Bureau of Mines, Report of Investigations 4781



Alcoa Chemicals



ALUMINAS and FLUORIDES

ACTIVATED ALUMINAS • CALCINED ALUMINAS • HYDRATED ALUMINAS • TABULAR ALUMINAS • LOW SODA ALUMINAS
ALUMINUM FLUORIDE • SODIUM FLUORIDE • SODIUM ACID FLUORIDE • FLUORIC ACID • CRYOLITE • GALLIUM

MATERIALS

Offer suggestions in forming 17 chromium stainless without damage . . .

despite limited ductility, material can be fabricated if precautions are followed

Realizing that many sheet metal departments are forming 17 chromium stainless steel for the first time, R. M. Nelson of Armco Steel Corp. offers a reminder that although it is not as ductile as the chromium-nickel grades, under proper precautions, the material can take most ordinary forming without damage.

In bending 17 chromium stainless, the following points should be considered: 1) radii should be as liberal as possible, and 2) there is a tendency to crack more easily when the sheet is severely bent *parallel* to direction of rolling. Wherever possible, jobs should be laid out so that severe bends will be at right angles, or at least, an angle of 45° to rolling direction. Where this cannot be done, a liberal inside radius is suggested.

Other recommendations for forming 17 chromium (Type 430) stainless steel sheets are: 1) on 90° bends on material 0.050" (18 gage) and lighter there should be no trouble. 2) If the radius is sharp, "orange peel" may show at the point of bend. This is not harmful, but can be lessened by using an inside diameter of at least two metal thicknesses. The same rule applies for the inside diameter of 90° bends on material heavier than 0.050".

On 180° bends of material lighter than 0.50", they usually, but not always, can be made flat — if the bend is transverse to the rolling direction. If the bend is parallel to rolling direction, inside diameter should be at least two metal thicknesses, which means there should be room for two thicknesses of metal in the bend after forming.

On 180° bends of material 0.050" and heavier, inside diameter of the bend should be at least two metal thicknesses if the bend is transverse, and four metal thicknesses if parallel to rolling direction.

(Information supplied by Armco Steel Corporation, Dept. CP, 1939 Armco Ave., Middletown, Ohio.)

Marked increase in toughness credited to modified polystyrene . . .

yet has practically same surface appearance of regular grade; injection molds and extrudes readily

Uses: Polystyrene thermoplastic readily injection-molded or extruded.

Features: Modified to satisfy the need for a thermoplastic which has properties intermediate between regular polystyrene and the very high shock-resistant materials. Modified product approaches the surface appearance and general physical strengths of regular polystyrene while exhibiting a marked increase in toughness as compared with the regular grade.

Description: MC-401 Modified Polystyrene is available in standard pellet form and in a smaller particle size suitable for dry coloring purposes.

In injection molding, cylinder temperatures generally should be in the range of 350-500°F for the most satisfactory and strongest parts. Specific setting depends primarily upon the part in question, and exceptions will be found where slightly higher or slightly lower cylinder temperatures are more advantageous. Die temperatures less than 140°F usually produce parts having a stain

When inquiring check CP 3514 on handy form, pgs. 2-3

MATERIALS

or matte finish. For improved surface gloss, die temperatures should be in the range of 140-180°F. Highest gloss possible is obtained at the maximum practical die temperature. Experience has proved that the strongest parts are obtained using relatively low cylinder temperature and high die temperatures — for example, 400-450°F on cylinder and 140-180°F on the die.

In extrusions, barrel temperature normally ranges from 325-425°F. Die temperatures in normal operation are 25-35°F higher than the barrel temperature adjacent to the die. As in injection molding, higher die temperatures produce extrusions having higher gloss. Excessive pull down or orientation should be avoided with modified polystyrene in applications where maximum strength in all directions is essential. Pull downs of 5% have been found to be acceptable.

Take off equipment and other extrusion techniques applicable to regular polystyrene can be used to handle modified polystyrene. Extrusion barrel temperature settings should be checked to determine the amount of heat introduced by the slightly higher frictional forces of this material as compared to unmodified polystyrene.

Typical Physical Properties of MC-401 Modified Polystyrene (ASTM)

Specific Gravity	1.04-1.06
Tensile Strength, psi	5500-6500
Elongation in Tension, %	8-15
Flexural Strength, psi	9500-10,500
Modulus of Elasticity in Flexure, psi	410,000-450,000
Compressive Strength at Yield, psi	12,000-14,000
Impact Strength, ft-lb/in notch 1/2" bar	0.4
1/8" bar	0.6
Hardness, Rockwell M	60-70
Deformation Under Load, %	2-3
Heat Distortion Temp (min), °F	185
Water Absorption (24 hr), %	0.1
Mold Shrinkage (injection), in/in	0.004-0.009

(Product of Koppers Company, Inc., Dept. CP, Pittsburgh 19, Pa. . . . or for more information check CP 3515 on handy form, pages 2 and 3.)

ASTM issues 7th edition on refractory materials

In its 304 pages, 1952 edition of ASTM manual on refractory materials presents some tests not in 1948 edition which it supersedes. These include determinations for modulus of rupture and for permanent linear change on firing of castable refractories. A proposed test method for disintegration of fireclay brick in an atmosphere of carbon monoxide is shown. Another addition is a survey of refractory service conditions in incineration of refuse. The proposed glossary of terms added relating to refractories is of interest.

Publication has other information of value not in category of ASTM standards. Examples are a procedure for calculating heat losses through furnace walls and suggested practice for use with ASTM panel spalling tests. Others are proposed petrographic techniques and standard samples for chemical analysis and pyrometric cone equivalent determinations. Manual contains twelve industrial surveys of refractory service conditions.

Volume brings up to date all ASTM specifications and test methods relating to refractories. "Manual of ASTM Standards on Refractory Materials" can be obtained from American Society for Testing Materials, Dept. CP, 1916 Race St., Philadelphia 3, Pa. Price is \$3.00 per copy in heavy paper cover and \$3.65 in cloth. When inquiring specify CP 3516 on handy form, pages 2 and 3.

U. S. P. Glycerine—in Mennen Lather Shave—has contributed to billions of smooth, close, satisfying shaves over the years. Indeed, for some 30 years this natural plasticizer and humectant has helped to keep Mennen cream uniform and smooth.

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The field of men's toiletries brings virtually all of Glycerine's properties into play. In after-shave lotions . . . brushless creams . . . hair tonics and the like, Glycerine may serve as a vehicle, solvent, penetrant or anti-freeze!

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When inquiring check CP 3517 on handy form, pgs. 2-3

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When inquiring check CP 3518 on handy form, pgs. 2-3

MATERIALS

Offer benzene phosphonic and phosphinic acids in research lots . . .

colorless, crystalline products can find common use as intermediates for forming metallic salts

Uses: Benzene phosphonic acid can be used as a solid acid, intermediate for forming metallic salts used as anti-fouling agents for paints, catalyst for urea formaldehyde and related resins.

Suggested uses for benzene phosphinic acid are: general anti-oxidant, to improve film properties of cured polysiloxane resins, intermediate for forming metallic salts, and as an accelerator for organic peroxide catalysts.

Description: Benzene phosphonic acid, $C_6H_5PO(OH)_2$, is a strongly dibasic acid which is soluble in water, alcohol and ether. Benzene phosphinic acid, $C_6H_5PHO(OH)$, is a strongly monobasic acid with a slight characteristic phosphine odor. It is soluble in alcohol and slightly soluble in ether. Both are in the form of colorless crystals. Some other properties are tabulated below.

BENZENE PHOSPHONIC ACID

Molecular weight	158
Specific gravity, 4°C	1.475
Refractive index, N_p	1.528
Melting point, °C	158
Water solubility, gm/100 gm H ₂ O, 25.5°C	40.3

BENZENE PHOSPHINIC ACID

Molecular weight	142
Specific gravity, 29°C	1.376
Refractive index, N_p	1.560
Melting point, °C	82-84
Water solubility, gm/100 gm H ₂ O, 25.5°C	7.7

(Available in research quantities from Victor Chemical Works, Dept. CP, 141 W. Jackson Blvd., Chicago 4, Ill. . . or for more information check CP 3519 on handy form, pages 2 and 3.)

Present industrial grade of dimethyl ethanolamine . . .

a 70% solution of the amine in water, available in tank car quantities

Uses: Manufacture of ion exchange resins, wetting agents, textile assistants, etc.

Features: Industrial grade offered as 70% solution of amine in water — available in tank car quantities.

Description: Dimethyl ethanolamine 70% is in addition to this maker's anhydrous, pharmaceutical grade.

(Products of Carbide and Carbon Chemicals Company, Division of Union Carbide and Carbon Corporation, Dept. CP, 30 East 42nd Street, New York 17, N. Y. . . or for more information check CP 3520 on handy form, pages 2 and 3.)

Separates theory and procedure in quantitative analysis

Unique feature of 493-page text on quantitative analysis is division of theory and analytical procedures. Purpose is to present fundamental principles without confusing them with details of specific determinations. Aim is to develop in student an understanding of science of chemical measurement, not simply the ability to analyze a few materials. Statistics are constantly being given greater emphasis in reporting and interpreting of chemical analyses. For this



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Foam wastes time; takes space; invites fire.

Kill foam with Dow Corning Antifoam A, the most efficient and versatile defoamer on the market. This silicone defoamer is also most economical to use because only trace quantities are required to quell many of even the most violent and persistent foams.

Tar and asphalt, for example, are effectively defoamed during processing as well as during application by concentrations of Antifoam A as low as 4 parts in 10 million.

Ten ounces of Antifoam A added to a 40,000 gallon batch of crystallizing sodium bromide prevented foaming in that batch and in the next 21 batches as well. Here the effective concentration works out to about 1 part in 10 million.

If cost, contamination, or full use of process equipment are prime considerations in your operations, try Antifoam A. Practically odorless, tasteless and non-toxic, Antifoam A is safe, fast and by far the most economical and versatile defoaming agent on the market.

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DOW CORNING CORPORATION
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When inquiring check CP 3521
on handy form, pgs. 2-3

CHEMICAL PROCESSING



SOLKA-FLOC REACTS FASTER!

When used in making cellulose derivatives, new and modern SOLKA-FLOC reacts far faster than other forms of cellulose. This means a big saving in time and labor for you.

Ease of handling and unusually high density are other important advantages you'll find in SOLKA-FLOC. What's more, it could open up for you new product opportunities which would not be possible with other forms of cellulose. Why not find out more about this versatile product? Write today to Dept. BF-7 at Boston.

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DUIT & CORES • ONCO INSOLES • CHEMICALS

When inquiring check CP 3522
on handy form, pgs. 2-3

MATERIALS

reason, chapter on theory of errors and application of statistical methods is appropriate. Sections are included on pH determination, potentiometric titrations, electrolytic separations, and colorimetric analysis. Rising importance of instrumental analysis is recognized by inclusion of several such methods. Text is well adapted to a short course in quantitative analysis or one of a full year.

To obtain "Quantitative Chemical Analysis" remit \$5.00 direct to McGraw-Hill Book Company, 327 West 41st St., New York 18, N. Y.

Laminators get good flow within minimum pick-up, low volatile ranges . . .

varnish possesses freedom from curl, has good dimensional stability, low water absorption

Uses: Unextended phenolic laminating varnish for application to core stocks employed in the manufacture of decorative laminates.

Features: Excellent flow within minimum pick-up and low-volatile ranges should be of outstanding interest to laminators. Freedom from curl, low water absorption, and good dimensional stability of laminated stocks as determined by NEMA and ASTM test methods are reported.

Description: Name that has been applied to this laminating varnish is Syncro 115. Specifications are outlined below:

Solids, %	62-66
pH	neutral
Viscosity (G-H), sec	2.2-2.5
Specific gravity	1.110-1.115
Gel time @ 320°F, sec	58
Gel time @ 350°F, sec	24

Conventional laminating practices apply. Values given below for Flow and Water Absorption Tests are pertinent to the good characteristics of Syncro 115:

Resin pick-up, %	32
Volatile content, %	4.5
Flow @ 1200 psi, %	3.1
Water absorption, ASTM	
24 hr, %	2.1
96 hr, %	4.2
thickness increase, %	1

(Product of the Snyder Chemical Corporation, Dept. CP, Bethel, Conn. . . or for more information check CP 3523 on handy form, pages 2 and 3.)

Applications and technology of stainless steel

First half of 36-page booklet presents pictorial survey of applications of stainless steel in the chemical processing industry. Pieces of equipment made of stainless are illustrated and they vary from nitric acid tanks to mixers for pharmaceuticals. Flow diagrams show how stainless units are incorporated in production of streptomycin and nitric acid.

Second portion of booklet discusses technology of fabricating stainless steel. This includes drawing, spinning, machining, riveting, and soldering stainless plate. Tabular listing presents comparative properties of several types of stainless. Chart of corrosion resistance to various media is provided for stainless steel 18-8. "Allegheny Metal in Chemical Processing" is issued by Allegheny Ludlum Steel Corporation, Dept. CP, Pittsburgh 22, Pa. When inquiring specify CP 3524 on handy form, pages 2 and 3.

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RESORCINOL, under National Production Authority allocation since June 1, 1951, has been released entirely from government control.

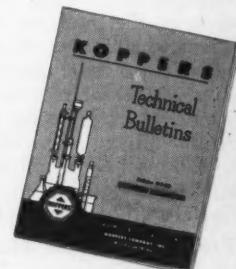
This means that you can order Koppers Resorcinol NOW for all defense and civilian uses.

To further augment the available supply of Resorcinol, Koppers will put new plant facilities into operation by the third quarter of this year.

Resorcinol is a very interesting chemical—worth your consideration. Typical end products are explosives, medicinals, dyestuffs, adhesives, textile and leather chemicals and compounds that make rubber adhere better to fabrics and cords. The versatile nature of Resorcinol stems from its many unusual reactions. These are worth investigating and may suggest new and undeveloped commercial applications.

Koppers Resorcinol is manufactured in two grades. Koppers Resorcinol, Technical, is produced in flake form with a minimum purity of 98.5%. Koppers Resorcinol, U.S.P., for medicinal and pharmaceutical applications, is in the form of fine crystals with a minimum purity of 99.5%.

A request on your letterhead will bring you complete information on Resorcinol as well as an experimental sample. Ask for Bulletin C-2-124. It describes many of the interesting and unusual reactions of Resorcinol, as well as its physical properties, chemical properties and uses.



KOPPERS COMPANY, INC.

Chemical Division, Dept. CP-7
Koppers Building, Pittsburgh 19, Pa.

When inquiring check CP 3525 on handy form, pgs. 2-3

MATERIALS

Catalyzing polymerizations safer using stabilized organic peroxide . . .

methyl ethyl ketone peroxide with non-volatile plasticizer less sensitive to heat and shock

Uses: Catalyst for the polymerization of vinyl type monomers and polyester resins. Suitable for room temperature cures of polyesters when redox metal organics (such as cobalt naphthenate) or certain amines are employed as promoters. Polymerizes some polyesters to the gel stage only, and then benzoyl peroxide may be used to give cure beyond the gel stage.

Features: Product contains a non-volatile plasticizer that stabilizes it — the pure product is too heat and shock sensitive to handle and ship safely.

Description: Cadox MDP contains 60% methyl ethyl ketone peroxide, dissolved in dimethyl phthalate plasticizer. Recommended storage is at 86°F or below. Being an oxidizing liquid it should be kept away from heat, sparks, open flames, and direct rays of sun.

In usage, promoter is always first mixed into resin, then the catalyst. Combination of peroxide and promoter may result in violent reaction.

(Product of the Cadet Chemical Corporation, Dept. CP, 205 Chicago Street, Buffalo 5, New York . . . or for more information check CP 3526 on handy form, pages 2 and 3.)

50% higher impact strength is attributed to rubber-filled phenolic molding compound . . .

as compared with usual general-purpose wood-flour or flock-filled materials

Uses: Flexible-type phenolic molding compound that can be compression or closed-mold molded and handled by any automatic preforming equipment. Not recommended for applications where continuous heat of more than 250°F is encountered.

Features: Has a low modulus of elasticity which permits its use for molding in thin sections around inserts. Said to absorb shock more readily than standard wood-flour or flock-filled materials due to the synthetic rubber filler.

Description: Cure time of Durez 14780 Black depends on the thickness of the molded part, although it is somewhat longer than for general-purpose types of phenolic molding compounds. Molding temperatures of 290-310°F are recommended. Preheating characteristics are reported to be very similar to general-purpose phenolics and surface finish is good. Flexural strength is 9000 psi (min) and tensile strength 6000 psi (min). Impact strength is approx 50% higher than for average general-purpose materials.

(Product of Durez Plastics & Chemicals, Inc., Dept. CP, North Tonawanda, N. Y. . . or for more information check CP 3527 on handy form, pages 2 and 3.)

Application of precipitated CaCO₃ in reinforced plastics

Technical data are presented in 21-page bulletin which reviews uses of two precipitated calcium carbonates (Surfex MM and Kalite) in fabricating reinforced polyester resins. Discussion points up specific advantages these materials

QUATERNARIES PROMOTE SANITATION IN CANNERRIES AND PEA VINGER STATIONS



Cleanliness is a recognized prerequisite in the canning plant for the processing of clean, wholesome food. However, maintenance of this cleanliness is a real problem — but one Armour can help solve.

Processing equipment in canneries has always been a source of flat sour organisms, and sometimes putrefactive anaerobic bacterial contamination. The spores of these heat-resistant organisms become impregnated in scale, crevices, etc., making them difficult to remove or kill. However, in order to provide complete sanitation, this form of contamination must be removed and controlled.

Blanchers. A combination of two Armour chemicals, Arquad S and Ethofat 242/25, has proved extremely effective in dealing with contamination in blanchers. Arquad S is a potent quaternary germicide, while Ethofat 242/25 is an effective detergent. The following formulation has been found to be most efficient:

Arquad S	0.7 lbs.
Soda Ash	0.5 lbs.
Tripoly phosphate	0.5 lbs.
Ethofat 242/25	1.3 lbs.
Water	100 gals.

In tests, there was a marked loosening of scale and organic contamination on the metal surfaces of the blancher, particularly on the interior of the drum and spiral. The foam from the detergent acted as a flota-

tion agent, carrying this organic material away, while the Arquad acted to reduce the remaining bacteria count. Sanitation in blanchers, however, is no more important than sanitation in the field, particularly pea vining stations.

Pea Viner Stations. Two of the major problems of pea viner stations are odor and fly control. Stack seepage contributes to both problems, and an adequate drainage system is one of the prime essentials for sanitation. After adequate drainage has been obtained, fly and insect breeding in the moist mat of vines at the base of the stack must be controlled. The same two Armour chemicals discussed above, Arquad S and Ethofat 242/25, can be used to provide odor and insect control protection.

Arquad S (50% active)	8 lbs.
Ethofat 242/25	0.5 lbs.
Soda ash	2.0 lbs.
Water to	50 gals.

50 gallons of this formulation are sufficient for one application to six 2-viner stations, or four 4-viner stations, providing seepage is confined to a narrow drainage trench and not allowed to spread over the adjacent ground. Respraying should be done every week during the period of active seepage; however, climatic conditions may dictate more or less frequent treatments. Samples of Arquad S and Ethofat 242/25 are available . . . just check the coupon.

ARMID O EFFECTIVE ANTI-BLOCK FOR PLASTIC AND WAX COATINGS

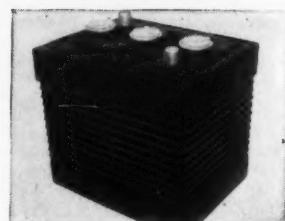
Armid O — a high molecular weight amide derived from pure crystallized oleic acid — has been found effective in many uses, particularly as an anti-block agent.

Due to its unusual properties as a mutual solvent, in paraffin coatings for wet-waxed papers Armid O improves penetration, flexibility, translucency and the "slip" or "feel" of the coating. Other processes use Armid O as a dye solvent and dispersing agent in stencil sheet manufacture, as a dispersing agent in inks, as an anti-tack agent in adhesive tapes, and as a solubilizing agent for certain dyes.

SPECIFICATIONS	MIN.	MAX.
Iodine Value	80	90
Free Fatty Acid	..	3.5%
Color (Lovibond 1 1/4")	..	3 1/2 R
Titer, °C.	68	..
Soap	..	0.5%
Odor	..	Bland

For further information on Armid O and Armour's other fatty amides, send the coupon for a new Armid booklet.

INTERNAL HARD RUBBER MOLD RELEASE AGENT



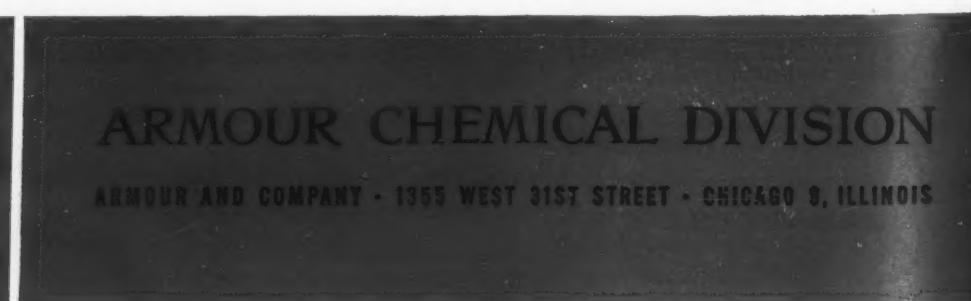
Armeen HT, one of Armour's fatty chemicals is being used as a mold release agent for hard rubber (Ebonite type, minimum Durometer hardness 90 on the A scale). This type of rubber is used for battery cases, steering wheels, casters, combs, etc. Armeen HT gives excellent extrusion rates, controls sulfur bloom, and eliminates the use of expensive external mold lubricants. Thus you use less costly fillers, obtain better adhesion of fillers to the rubber, increase the capacity of existing equipment, reduce the number of rejects and the cost of manufacture, and improve the appearance of the finished product.

Armeen HT may be milled directly into the rubber recipe. Proper proportions of Armeen to rubber hydrocarbon content range from 0.25 to 0.6%. Amounts above 0.6% may be used by decreasing the amount of accelerator or using a different type of accelerator.

Free samples are available — simply check and mail the coupon.

ARMOUR CHEMICAL DIVISION

ARMOUR AND COMPANY • 1355 WEST 31ST STREET • CHICAGO 8, ILLINOIS



**Longer-Lasting, Faster Drying,
Non-Yellowing
Alkyds With Neo-Fat 3R**



To keep kitchen whites from yellowing is a laboratory problem for the paint chemist. A new answer to this problem is Armour's improved Neo-Fat 3R—a fatty acid material produced by a new low temperature solvent crystallization process. When used to formulate alkyd resins, Neo-Fat 3R gives faster drying, non-yellowing finishes. Its lower titer means that it can be exposed to temperatures as low as 5°C. without the slightest solidification. High iodine values and low saturated fatty acid content yield more double bonds per gallon of fatty acids, contributing better dry and harder films to alkyd resin finishes.

Faster processing time and brilliant color which carries over into the finished product are other important advantages of Neo-Fat 3R. It also offers good flexibility in baking finishes, even at 50°F.

For further information on this improved fatty acid material, send the coupon for Armour's Technical Bulletin A-1, which gives complete data, including suggested formulas.



A new booklet—"Armour Chemicals for Soaps and Detergents"—provides a handy reference, not only to Armour's products, but to the field of industrial soaps and soapmaking. Suggestions on soapmaking, charts, tables, and formulas are included, as well as a listing of Armour's fatty acids, derivatives, and other chemicals. Send the coupon for your free copy.

FATTY ACIDS
LONG-CHAIN FATTY ACID DERIVATIVES
INDUSTRIAL OILS

When inquiring check CP 3528 on handy form, pgs. 2-3

PRODUCT IMPROVEMENT AND DEVELOPMENT WITH COMMERCIALLY PURE MYRISTIC ACID

Neo-Fat 13, Armour's fractionally distilled, commercially pure myristic acid, has been the solution to many new material developments and responsible for improvement of many products which are already on the market.

Myristic acid occurs naturally as the glyceride in a few vegetable oils and fats. It is a hard crystalline substance falling between lauric acid and palmitic acid in the saturated fatty acid series. Commercially it is available as Neo-Fat 13 with over 90% pure myristic acid content. The balance is largely lauric acid with a small amount of palmitic acid and only a trace of unsaponifiables.

SPECIFICATIONS

	MIN.	MAX.
Iodine No.	2.0	
Acid Value	243	249
Titer, °C.	48	52
Color, Lov. 5 1/4"	1.0R-10Y	
Unsaponifiable	0.5%	
Moisture	0.2%	
Odor	Characteristic	
Appearance	Characteristic	

COMPOSITION

Myristic Acid	90.00% (minimum)
Lauric Acid	4.0%
Palmitic Acid	4.0%
Unsaturated Acids	2.0%

SOLUBILITY AND COMPATIBILITY

Neo-Fat 13 is soluble in acetone, amyl acetate, benzol, butanol, carbon tetrachloride, dipentene, ethanol 90% and 100%, kerosene, methyl cellosolve, turpentine, V.M. & P. naphtha and xylol.

It has limited compatibilities with alkyd resins, asphalt, beeswax, carnauba wax, linseed oil, paraffin wax, petroleum pale oil and soybean oil.

USES

The availability of Armour's high purity myristic acid provides a new raw material for the synthesis of organic compounds. Alcohols, nitriles, amine esters and metallic soaps may be produced easily and find innumerable applications. Many references have been made in recent literature to the use of various Neo-Fat 13 derivatives in detergents, dyes, textiles, wetting agents, lubrication oils and greases and other industrial applications.

Monoglycerol ester is a substitute for coco butter in suppositories, and is a superfatting agent for soaps, creams, lotions,

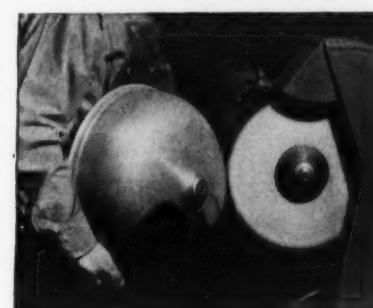
etc. It may also be used in the preparation of agricultural parasiticides.

Neo-Fat 13 or its metallic soaps have been used in rubber compounding, synthetic resins, paints and in grease compounding.

The sodium or potassium soaps of Neo-Fat 13 have remarkable sudsing and wetting action without the skin irritating tendencies found in most free-lathering soaps. This suggests its suitability for cosmetics, shampoos, shaving creams, etc.

Neo-Fat 13 is available for immediate shipment in flake form both in 50-pound multi-wall bags and in aluminum tank cars. Send today for samples for your testing. For further information on Armour's high-purity coconut oil fatty acids, including caprylic, capric, lauric and myristic, send for our new, free fatty acid booklet.

ETHOMID HT/60 SPEEDS WASH OFF OF LIQUID BUFFING COMPOUNDS



Ethomid HT/60, in amounts ranging from 0.625 to 5% of the total, increases the ease of removal of the "bulk" of liquid buffering compounds. A concentration of 1.25% is most effective for cold water removal when either vegetable or mineral oil has been used in the formulation.

Although Ethomid HT/60 facilitates removal of the "bulk" of the buffering compound, a thin film remains, after cold water washing. Washing with warm water or scrubbing with hot soapy water removes the visible film, but after this treatment the surface cannot be wetted with water. In order to make the surface re-wettable, further cleaning is required.

MATERIALS

bring to this phase of plastics processing. Laboratory tests used to evaluate the performance of these materials are summarized. This digest is presented in terms of their effects on physical properties and chemical resistance of a number of commercially formulated polyester resins.

Detailed results of specific analyses are offered in series of eight tables. Other tabular charts give weighing and cost factors of filled reinforced polyesters as well as specifications for both compounds. Bul 7 is issued on letterhead request to Diamond Alkali Company, 300 Union Commerce Bldg., Dept. CP, Cleveland 14, Ohio.

Report color no problem in light GR-S stocks with stabilizer . . .

prevents destructive effects of heat and oxygen during storage and processing

Uses: Chemical stabilizer for production of non-staining and non-discoloring GR-S synthetic rubber. Expected to find its greatest utility in light colored stocks for white sidewall tires, pressure sensitive adhesives, shoe soles, tiling, sheeting, chemically blown sponge rubber, white insulation, and a number of other products where light colors are required.

Features: Besides rendering GR-S non-discoloring and non-staining, stabilizer imparts good heat stability to rubber stocks and prevents destructive effects of heat and oxygen during storage and processing.

Description: Polygard is known chemically as an alkylated aryl phosphite. It is incorporated with the rubber as an emulsion during the production process — actually blended with GR-S during its liquid or latex form. Can be used with rubber produced by either the "hot" or "cold" process, and is also adaptable to use with the newer types of oil-extended rubbers.

(Product of Naugatuck Chemical Division, United States Rubber Company, Dept. CP, Rockefeller Center, New York 20, N. Y. . . or for more information check CP 3529 on handy form, pages 2 and 3.)

Paint resin proves to be superior to Pliolite S-5 milled resin in three respects . . .

improvements pertain to solvation properties, color, and as deflocculating agent

Uses: Formulation of concrete floor paints, wall sealers, stucco and concrete finishes, aluminum paints, and metal primers.

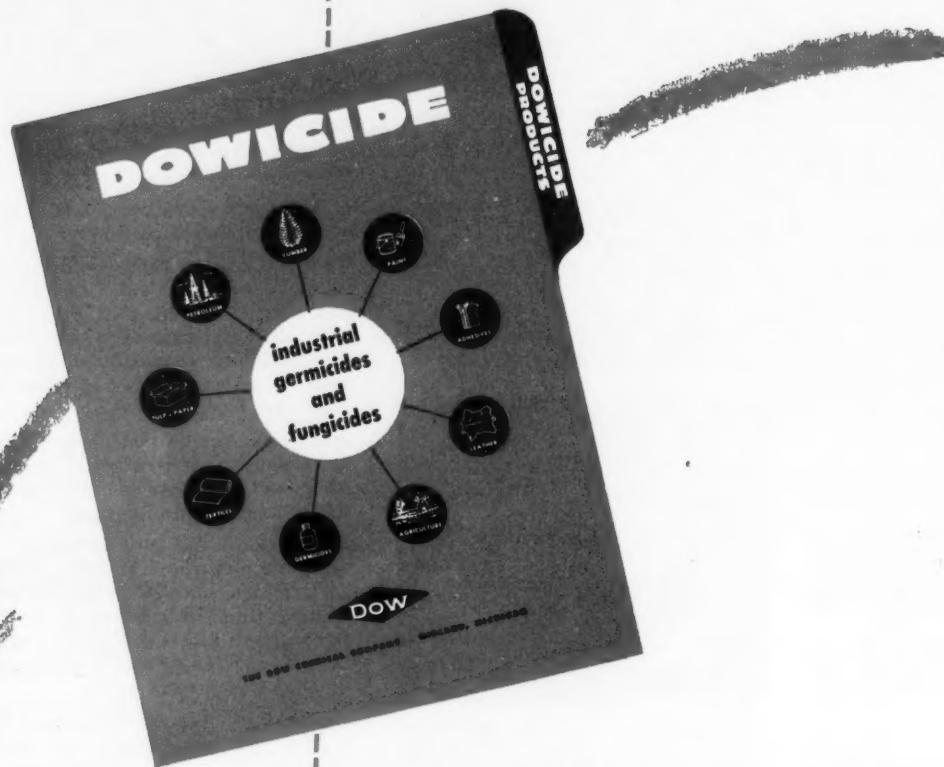
Features: Pliolite S-5B is reported to be superior in three respects to the milled resin, Pliolite S-5. Solutions of resin are improved in color, being water-white. Material is an improved deflocculating or pigment-dispersion agent, and it is reported to have faster solvation characteristics.

Description: Material is copolymer of styrene and butadiene. It is treated during production cycle to eliminate milling operation. It is reported that Pliolite S-5B may be substituted for the milled resin at approximately 5 cents per pound less than the cost of milled material.

(Product of Chemical Division, The Goodyear Tire & Rubber Company, Dept. CP, Akron, Ohio. . . or for more information check CP 3530 on handy form, pages 2 and 3.)

Mail this coupon	
Check the items you need. Fill in name and address, and mail.	
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Send Samples: <input type="checkbox"/> Armid O <input type="checkbox"/> Armeen HT <input type="checkbox"/> Arquad S <input type="checkbox"/> Neo-Fat 3R <input type="checkbox"/> Ethofat 242/25 <input type="checkbox"/> Neo-Fat 13	
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The Complete Story of Proved Protection against Mold and Bacterial Attacks!



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against
MOLD
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BACTERIA

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Dowicide Division, Dept. DC-21A, Midland, Michigan
Please send me the Dowicide Product Information File.

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Company _____
Street _____
City _____ State _____
I am interested in using Dowicide Products for _____

When inquiring check CP 3531 on handy form, pgs. 2-3

MATERIALS

Plasticize vinyl chlorides —
calendered, extruded goods,
organosols, plastisols . . .

imparts heat and light stability, and is compatible with wide range of materials

Uses: General-purpose, primary plasticizer for vinyl chloride resins. Suitable for calendered and extruded products, as well as organosols and plastisols.

Features: General utility in all vinyl-plastic compounding is outstanding highlight. Excellent light and heat stability can be taken advantage of in clear and pigmented products. Compatibility with vinyl chloride resins and with many coating resins and polymers is helpful. Tests indicate that neither ultraviolet light nor high humidity at elevated temperatures has adverse effect on compatibility.

Description: Flexol CC-55 is a di-2-ethylhexyl hexahydrophthalate. Vinyl resins plasticized with it are said to be resistant to water leaching and have good low temperature characteristics. Plastisols containing it are reported to have very low viscosities and excellent storage stability. Physical properties follow:

Molecular weight	396.59
Specific gravity @ 20/20°C	0.9586
Average weight per gal @ 20°C, lb	7.98
Boiling point @ mm Hg, °C	216
Vapor pressure at 200°C, mm Hg	2.2
Absolute viscosity @ 20°C, cp	42.1
Pour point, °C	—53
Refractive index @ 20°C, n _D	1.4619
Coefficient of expansion @ 20°C, per °C	0.00077
Solubility in water @ 20°C	insoluble
Solubility of water in @ 20°C, % by wt	0.3
Flash point (COC), °F	425

(Product of Carbide and Carbon Chemicals Company, Division of Union Carbide and Carbon Corporation, Dept. CP, 30 East 42nd Street, New York 17, N. Y. . . or for more information check CP 3532 on handy form, pages 2 and 3.)

Tells role and application of naphthoresorcinol

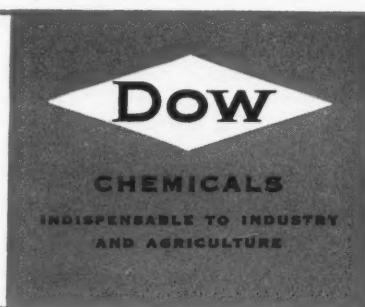
Bulletin presents discussion of physical and chemical properties of naphthoresorcinol, which is of particular interest in carbohydrate studies. Naphthoresorcinol is important in sugar chromatography to provide positive identification of reducing and non-reducing sugars. Other applications covered in bulletin pertain to glucuronic acid determination in urine and use of the substance in dyestuffs. Booklet concludes with bibliography on naphthoresorcinol.

"Naphthoresorcinol" is issued by Schwarz Laboratories, Inc., Dept. CP, 202 E. 44th St., New York 17, N. Y. When inquiring specify CP 3533 on handy form, pgs. 2-3

Noteworthy for their emulsifying, suspending, wetting and detergent properties . . .

two liquid nonionic surface active agents: one water- and the other oil-soluble

Uses: Dispersant NI-8586 is applicable as a detergent by itself, or it may be blended with polyphosphates to produce compositions with many advantages over conventional soap products. Also, many other combinations with inorganic builders to increase detergency and with anionic surface active agents to increase sudsing are possible. Built compositions of NI-8586 are particularly



MATERIALS

suitable for commercial laundry, self-service laundry, and other tumbling type washer applications.

In addition to its use as a detergent, 8586 may be utilized in the following applications: 1) as a dispersant for lime soaps or finely divided solids, 2) as an emulsifier in solvent cleaning operations, 3) as a wetting agent especially where low foam is desirable, and 4) compounded with quaternary ammonium type materials as a detergent-sanitizer.

Dispersant NI-8593 is designed as a detergent for those systems using petroleum solvents. It can be used also as an emulsifying agent for the preparation of water-in-oil emulsions.

Features: High detergency properties and emulsifying, suspending and wetting abilities.

Description: Water-soluble product, Dispersant NI-8586, is a clear, pale-amber liquid with a density of 8.75 lb/gal at 68°F. Viscosity decreases rapidly with temperature rise: from about 2700 cp at 10°C to about 20 cp at 100°C. A 10% solution in distilled water has a pH of 6.5 to 8.0.

Surface tension varies from 40 dyne/cm for a 0.001% solution to about 31 dyne/cm for a 1.0% concentration. Product 8586 is completely soluble at all concentrations in such solvents as acetone, the lower alcohols, and mineral spirits. It is chemically stable in the presence of strong acids and alkalis and in solutions of electrolytes. However, it is "salted out" of concentrated solutions of alkalis and electrolytes. Foaming characteristics are relatively low.

Dispersant 8586 displays excellent lime soap dispersing power in comparison with several commercial synthetic surface active agents. It is available in barrel-lot quantities.

An oil-soluble nonionic surface active agent, Dispersant NI-8593 compares closely to 8586 in the viscosity-temperature relationship: from 2000 cp at 10°C to 1 cp at 100°C. It is a clear yellow liquid with a density of 8.43 lb/gal at 68°F. A 5% solution in 50% alcohol has a pH of 7.0 to 8.0.

It is miscible in all proportions with such common solvents as acetone, alcohol, kerosene, mineral oil, vegetable oils, and mineral spirits. It is dispersible in such solvents as benzene, carbon tetrachloride, toluene, and xylene. Availability is in barrel-lot quantities.

(Developments of Oronite Chemical Co., Dept. CP, 38 Sansome St., San Francisco 4, Calif. . . or for more information check CP 3534 on handy form, pages 2 & 3.)

Handling of sodium and potassium chromates and dichromates

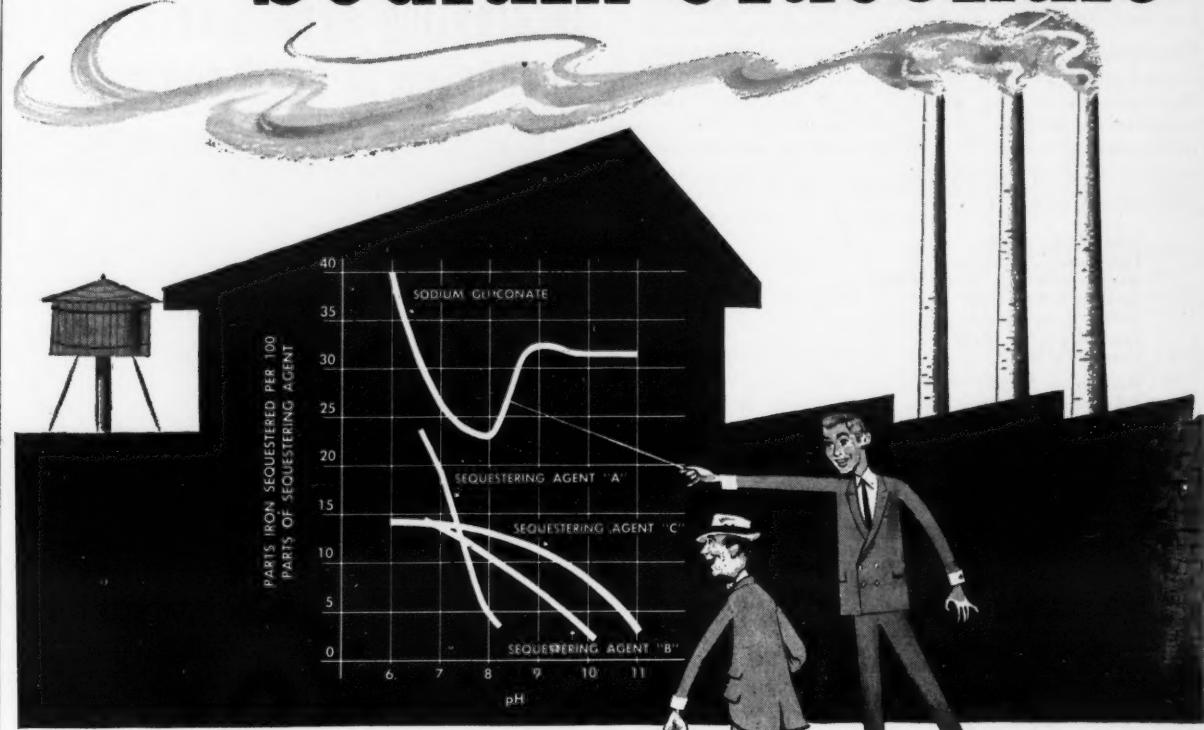
Twelve-page data sheet emphasizes safety techniques to be observed when handling sodium and potassium dichromates and chromates. Compounds are mildly oxidizing in character. Concentrated solutions of chemicals in the presence of strong acids will approach oxidizing power of chromium trioxide. Manual discusses personal safety hazards and outlines training for employees in standard methods of safe practice and use of equipment for personal protection.

Recommendations are also made regarding engineering controls, ventilation methods, tank cleaning and repairs, and waste disposal. First aid recommendations are included. To obtain Safety Data Sheet SD-46, remit 25c direct to Manufacturing Chemists' Association, Inc., Dept. CP, 15th and H St., N.W., Washington 5, D.C.

Put In Less...Take Out More—

SEQUESTER IRON with

Pfizer Sodium Gluconate



● Here's the proof that you put in less...take out more when you sequester iron with Pfizer Sodium Gluconate, Technical. On this chart are the results of a recent study in our laboratories on the iron sequestering power of various sequestering agents. Of the four chemicals on the chart, you will note that Sodium Gluconate exhibited by far the best results in sequestering the ferric ion over a wide range of pH. Pfizer Sodium Gluconate, Technical,

is a stable, free-flowing, tan-colored, crystalline powder. It is available in 100-lb. multi-wall paper bags. Try the sequestering agent with proved results. "Put in less sequestering agent...take out more iron"...with Pfizer Sodium Gluconate, Technical. Contact Pfizer today for more detailed information about this study. Call or write:

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PFIZER

When inquiring check CP 3535 on handy form, pgs. 2-3

MATERIALS

Add to lubricating oils for alkaline detergency and corrosion inhibition . . .

especially for Series 2 oils where high sulfur fuels are employed

Uses: Additive for lubricating oil, especially Series 2 oils which are recommended where high sulfur fuels are used or in high output supercharged equipment which is to be operated either with or without high sulfur fuels.

Features: Combines oil antioxidant and bearing corrosion inhibition properties with highly effective alkaline detergency.

Description: Aerolube 92 is recommended at a concentration of 11.75% by volume to meet the rigorous requirements of the Series 2 type lubricants. Oils compounded with Aerolube 92 at this concentration also meet existing standards of silver bearing compatibility.

Typical chemical and physical properties of the additive are outlined below:

Zinc, % by weight	0.6
Phosphorus, % by weight	0.6
Ash (unsulfated), % by weight	16.6
Barium, % by weight	8.7
Sulfur, % by weight	3.8
Specific gravity, 60/60°F	1.030
Color, ASTM	5 dil
Flash point (COC), °F	350
Pour point (ASTM), °F	15
Saybolt viscosity @ 130°F	1500

(Product of the American Cyanamid Company, Dept. CP, 30 Rockefeller Plaza, New York 20, N. Y. . . or for more information check CP 3536 on handy form, pages 2 and 3.)

German and Russian progress in plastics and elastomers

Abstracts from translations of German and Russian reports are presented in 12-page bulletin. Subjects pertain to recent patent applications and research reports on plastics and synthetic rubbers. Approximately 53 separate items are included in bulletin, which lists price of translation and briefly discusses the work. Bulletin may be used as source of information about progress of German manufacturers, development of new products, and the problems investigated by Russian scientists. Bul 64 is issued by Research Information Service, Dept. CP, 53 Nassau St., New York 38, N. Y. When inquiring specify CP 3537 on handy form, pages 2 and 3.

Produce vitamin E from pure tocopheryl ester . . .

d-form available commercially; said to have highest vitamin E content tested

Uses: An esterified form of the vitamin E isomer (appearing in nature) that has potential utility in vitamin production.

Features: First time that a pure tocopheryl ester in the *d*-form has been available commercially, according to this manufacturer. Formerly, they were available in racemic synthetic mixtures.

Description: Type 6-100 is the term that has been applied to pure, crystallized *d*-alpha-tocopheryl acetate. The product is prepared from vegetable oil as a fine crystal-

MONSANTO
CHEMICALS . . . PLASTICS

FOR YOUR INFORMATION

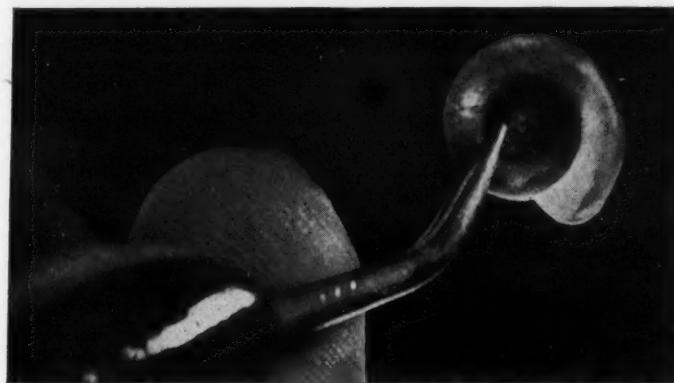
Every month Monsanto publishes these pages of pertinent information which may be helpful to you. This issue discusses:

Intermediates
Plasticizers
Wood Preservation
Snail Control

AROCLORS
Defoaming Agent
Sodium Phosphates

Additional information will be furnished on request.

Interesting experiments with Santobrite conducted in snail control program



Certain species of snails, although harmless in appearance, act as carriers of parasites which cause schistosomiasis. This specimen, of the *Australorbis glabratus* strain from Brazil, was dead after 24-hour exposure to Santobrite. (Picture by National Institute of Health.)

Experiments with Monsanto's Santobrite* have been conducted by Army, Navy and Public Health Service officials in a campaign to eradicate certain species of snails. In China, Egypt, Africa, Brazil and other countries, snails act as intermediate hosts for schistosomes, which cause schistosomiasis in humans. It is estimated that 110 million people are afflicted with schistosomiasis, a debilitating and eventually fatal disease. To date, a fully satisfactory treatment for the disease has not been found, thus giving added importance to the snail control project.

World War II gave sudden impetus to the investigation of schistosomiasis. During the invasion of Leyte in the Philippines, 1,700 U. S. troops fell victims of the disease. It is not a rapid killer, but spreads its death slowly by making its sufferer extremely listless. Death takes place as a result of its ravages . . . damage to the intestines, bladder, liver or lungs.

Schistosomiasis cannot be passed directly from one human being to another. Human infection, because of the peculiar life cycle of the parasitic worm which causes the disease, comes almost directly from the all-important snail, through polluted water. To date, laboratory and field tests indicate, from an economic and performance standpoint, that the most efficient chemical for eradicating snails is Santobrite.

Monsanto's Santobrite is currently being used to control sap-stain in lumber, and slime and algae in industrial cooling waters. It acts as a preservative for many cellulose products, such as fiberboard and paper, and plywood adhesives.

Mail the coupon for two new technical bulletins

Bulletin No. O-80—Benzyl Chloride. Gives handling and technical data on benzyl chloride, a cyclic intermediate with applications ranging from pharmaceuticals to rubber accelerators.

Bulletin No. O-81—Santicizer® 3. Describes Santicizer 3, a solid, sulfonamide-type plasticizer especially useful in adhesives and coatings.

Monsanto uses new process in making benzoic acid

In its expanded plant capacity for the manufacture of benzoic acid, Monsanto is employing an entirely new synthesis from basic raw materials. It is the first such process in America. It doubles the company's capacity for making technical and U.S.P. grades of benzoic acid as well as Benthal.*

Try this low-cost, efficient plasticizer . . . you can get it now

Monsanto Ortho-Nitrophenyl may be employed as a primary plasticizer or extender for industrial-type molded, extruded, plastisol or organosol compounds. ONB is low in price . . . and available.

In vinyls, ONB helps impart resistance to grease and abrasion—may be extended by the addition of petroleum-type plasticizers, further lowering costs. ONB is an excellent plasticizer for glove coatings, window gaskets, general gasketing materials, welding, channelling, machinery supports and protective coatings.

In vinyl acetate adhesives, ONB is a low-cost primary plasticizer. It can be used in high concentrations to retain toughness and adhesion without excessive softening of the film. Its low cost permits the production of economical adhesives for tabbing cements, cardboard box sealing, for bonding acetate film to paper, for overlays or for packages with acetate windows.

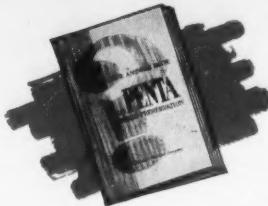
In celluloses, ortho-nitrophenyl serves as the plasticizer for such dark-colored products as molded toys, toy gun stocks and similar production. Excellent for reclaimed acetate.

For further information, contact the nearest Monsanto Sales Office or mail the coupon for a copy of Monsanto Technical Bulletin No. O-78.

ortho-ETHYLNITROBENZENE has interesting reactions

This low-cost intermediate and its derivative, ortho-ETHYLANILINE, now are available from Monsanto. They undergo many interesting reactions to yield, for example, indole, ortho-amino and ortho-nitroacetophenone, quinolines, a substituted thiourea, an isocyanate and cinnolines. Technical bulletin and quotation available upon request.

APPROXIMATE PROPERTIES of ONB: Molecular Weight: 151.1 . . . Appearance: Yellow to green, clear liquid . . . Assay: 99-100% (including approx. 4% to 6% para isomer) . . . Boiling Point: About 228° C. . . Crystallizing Point: About -12° to -14° C. . . Refractive Index at 25° C.: 1.53 . . . Solubility: Miscible in most organic solvents, immiscible in water . . . Specific Gravity at 25°/25° C.: 1.1.

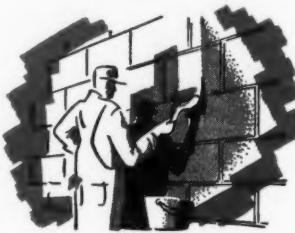


If you want to make wood last, read this book

A list of questions most often asked about Monsanto Penta (pentachlorophenol) has been compiled and the queries answered by Monsanto specialists.

If you are a user of wood in any type of construction, the booklet has a world of information that will be valuable to you. Mail the coupon for your free copy.

It costs no more to use AROCLORS



You can get the extra qualities that Monsanto AROCLORS* offer in high styrene-butadiene copolymer formulations, such as Pliolite S-5 and Marbon, without increasing your production costs. In addition, the AROCLORS increase stability and durability. They give formulations better resistance to actinic rays and heat. Coatings formulated with AROCLORS provide excellent protection against moisture, acids, alkali and other corrosive influence.

Ask for AROCLORS literature. Copies of the following bulletins are yours, without obligation: No. P-126, "AROCLORS as used in Pliolite S-5"; No. P-115, "THE AROCLORS"; No. P-124, "AROCLORS as used in chlorinated rubber"; No. P-131, "AROCLORS as co-plasticizers for polyvinylchloride." For your copies, contact the nearest Monsanto Sales Office or mail the coupon.

SEND INFORMATION: Benzoic Acid.
 Benthal. ortho-ETHYLNITROBENZENE.
 Sodium Phosphates for use in.....

SEND LITERATURE: Bulletin 0-78, "ortho-Nitrophenyl." Bulletin 0-80, "Benzyl Chloride." Bulletin 0-81, "Santicizer 3."
 Booklet, "Your Answer Book on PENTA Wood Preservation." Bulletin P-115. Bulletin P-124. Bulletin P-126. Bulletin P-131.
 Bulletin, ortho-Ethylnitrobenzene.

SEND SAMPLE: Sterox 110.

Proved product has new name



A new, high-molecular-weight alcohol ester, developed by Monsanto as an efficient defoaming agent, has been known as AE-1. The name now has been changed to *Sterox* 110*.

The numerous uses for Sterox 110 include: A defoamer in producing ethyl alcohol from molasses . . . defoamer in producing glycerol from fats . . . for foam control in the manufacture of yeast and other fermentations . . . control of foam in certain bottle-washing operations . . . solving foam problem in polystyrene latex water dispersions . . . lubricant for vinyls that are extruded or calendered . . . coplastizizer for rubber hydrochloride and chlorinated rubber.

Looking for sodium phosphates? Look to Monsanto!

Monsanto is one of the world's most important producers of phosphates, including the sodium phosphates. Quality in these products is controlled every step of the way from the phosphorus matrix to final shipment.

Monsanto mines phosphorus matrix from the hills of Idaho and Tennessee . . . converts to elemental phosphorus of better than 99% purity . . . makes phosphoric acid from which the phosphates are derived.

Monsanto Sodium Phosphates include:

Mono Sodium Phosphate

Uses: Acid cleaners Textiles
Water treatment

Di Sodium Phosphate

Uses: Cheese Water treatment
Leather Dye
Textiles Pigments
Detergents

Tri Sodium Phosphate

Uses: Water softening Water treatment
Detergent Textiles
Metal cleaning

Tetra Sodium Pyrophosphate

Uses: Soap Pitch control
Textiles Metal cleaning
Detergents Oil well drilling
Clay dispersant Water treatment
Dyeing Water softening
Bleaching Glass

Sodium Acid Pyrophosphate

Uses: Baking Powder Electroplating
Oil well drilling Prepared flour

Sodium Tripoly Phosphate

Uses: Detergents Water treatment
Pitch control Clay dispersant
Metal cleaners

For details on these products and their applications, contact the nearest Monsanto Sales Office or mail the coupon.

MORE PHOSPHORIC ACID

Monsanto has increased its capacity to produce phosphoric acid, ammonium phosphates and potassium phosphates for use in making liquid and water-soluble fertilizers. The advantages of liquid and soluble fertilizers are: High concentration of nutrients, quick availability to plant roots, ease of handling and application.

• • • • •

MONSANTO CHEMICAL COMPANY, 1700 South Second Street, St. Louis 4, Missouri. District Sales Offices: Birmingham, Boston, Charlotte, Chicago, Cincinnati, Cleveland, Detroit, Los Angeles, New York, Philadelphia, Portland, Ore., San Francisco, Seattle, Twin Cities. In Canada, Monsanto Canada Limited, Montreal.

*Reg. U. S. Pat. Off.



MONSANTO CHEMICAL COMPANY
1700 South Second Street, St. Louis 4, Missouri

Please send, without cost or obligation, information, literature or sample as indicated at left.

Name..... Title.....

Company.....

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City..... Zone..... State.....

MATERIALS

line material. It melts at room temperature, however, to a light yellow oil. Solid form is reassumed after prolonged storage at low temperature.

Rat anti-sterility bio-assays show that the product is the most potent vitamin E ever tested in this concern's labs.

(Distillation Products Industries, division of Eastman Kodak Company, Dept. CP, Rochester 4, N. Y. . . . or for more information check CP 3539 on handy form, pages 2 and 3.)

Carload and tank-car lots of soil conditioner being offered . . .

one gal of liquid diluted with 30 gal of water will treat approx 300 sq ft of soil

Uses: To alter condition of the soil aggregate. Hard clay soils, for example, are converted into lumpy soil of good tilth and with the looseness and crumbly characteristics of rich loam.

Features: Soil treated with conditioner is reported to give better drainage, improved aeration, water retention and workability, reduced moisture loss through evaporation and non-crusting or slaking.

Description: Acrylon is the sodium salt of hydrolyzed polyacrylonitrile. It is being offered in carload and tank-car quantities in both dry powdered form and in liquid form.

One gal of Acrylon liquid when diluted with 30 gal of water will treat approximately 300 sq ft of soil. One lb of pure Acrylon powder, spread like fertilizer or seed and worked into the soil will process 200 sq ft.

Availability in bulk form is only to manufacturers and distributors of garden and farm supplies.

(Manufactured by American Polymer Corp., Dept. CP, Peabody, Mass. . . . or for more information check CP 3540 on handy form, pages 2 and 3.)

Chemical-resistant plastic withstands heavy loads at high temps . . .

point of sag is 50 to 100°F higher than chemically resistant hard rubbers

Uses: In production equipment used by the petroleum, rayon, pulp and paper, mining and various other chemical process industries. One of its present uses is in chemical filtering equipment as filter plates 33" in diameter, 1/2" in thickness, and weighing over 22 lb.

Features: Ability to support heavy loads at elevated temperatures — for example, its point of sag is 50 to 100°F higher than chemically resistant hard rubbers. Possesses resistance to chemical attack.

Description: It is reported that Chemrok's resistance to acid solutions, such as sulfuric and hydrochloric, is superior to that of other thermosetting materials. Tests indicate it to be resistant to most chemical and caustic solutions of concentrations commonly used in industry. Chemrok is a moldable material and its properties can be utilized in complex parts of almost any shape or size. It is available molded to individual requirements.

(Announced by The Richardson Co., Dept. CP, 2766 Lake St., Melrose Park, Ill. . . . or for more information check CP 3541 on handy form, pages 2 and 3.)

When inquiring check CP 3538 on handy form, pgs. 2-3

Statistical Quality Control Changed Some Production Figures

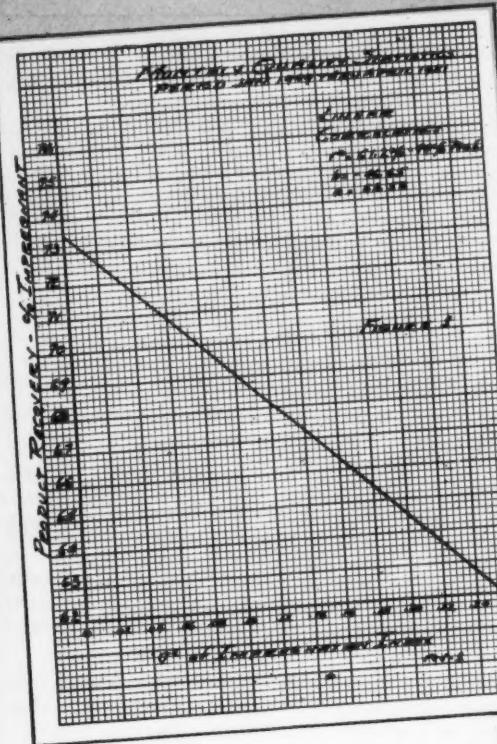


Figure 1 — Variability vs Product Yield

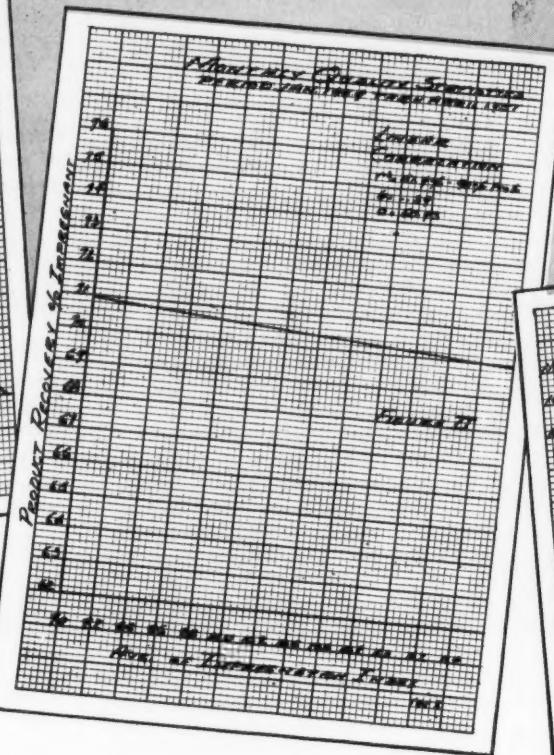


Figure 2 — Average vs Product Yield

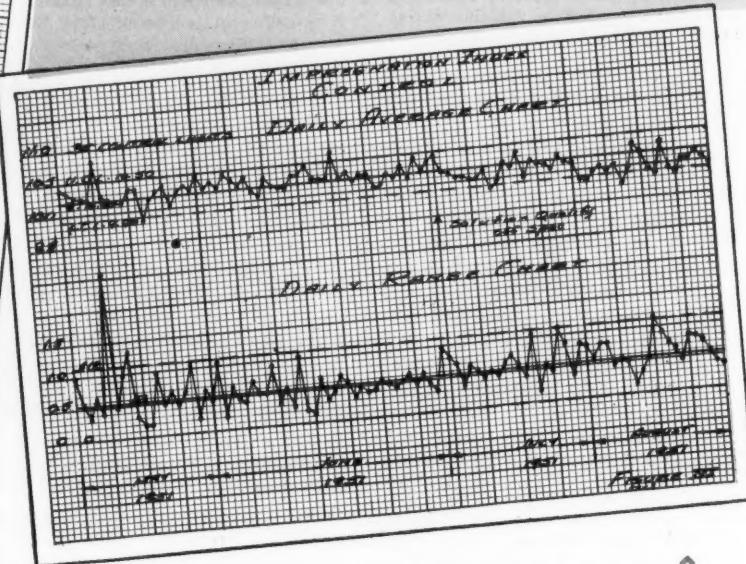


Figure 3 — Typical Control Chart

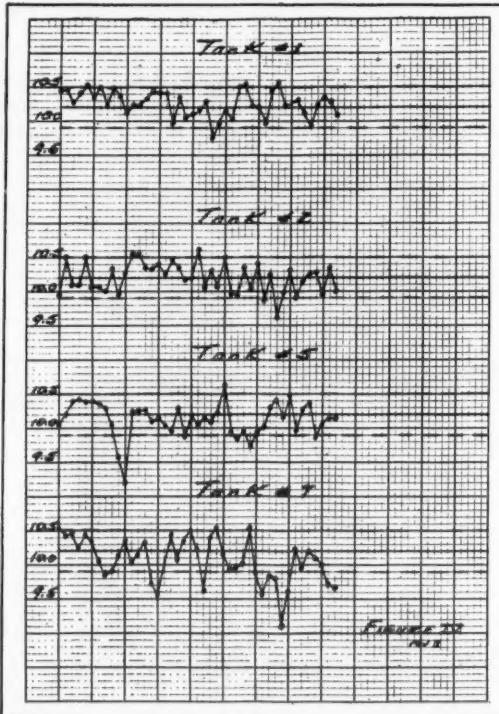


Figure 4 — Study of Batch-to-batch and Tank-to-tank quality

DEFINING trouble in a chemical process is not a simple procedure — even with statistical methods. In mechanical industry, a control chart for fraction defective will readily indicate trouble on a machine or process and it will isolate the trouble quickly. In contrast to this, production of synthetic petroleum catalyst may involve batch and continuous operations, yields of product in thousands of tons per month, half a dozen raw materials of varying quality, and many other factors which affect product quality. Twenty-five or more variables are not uncommon.

Operating such processes in the past has been something of an "art." Statistical methods, on the other hand, often offer a direct, objective approach. This is how they were applied in one case:

Figure 1 shows the relation between variability of one in-process point and yield of the product of that process. Figure 2 covers the same ground, but plots average or level against yield of this product. It is important to note that change in yield is more pronounced when variability (σ^2) of the Impregnation Index is correlated with it than when average or level is.

Though this may seem unorthodox, it can be explained by the fact that the process which produces the index is such that index level is

not too difficult to adjust. Controlling variability, however, is more difficult due to peculiarities of the process. When this was learned, a study of the variable was begun with control charts. Typical chart is shown in Figure 3. It shows some lack of control with points falling outside the limits of both range and average of the Index.

Process studied was a batch process carried out in tanks. Figure 4 shows quality shifts, both from batch to batch in one tank, and from tank to tank. It was found that in a restricted period of time (one month, for example) one tank could be made to produce consistent results. This was not true when more than one tank was considered.

Actual problem (or problems) were further narrowed by discussing possible cause of the variations. Although an imposing list grew out of the discussion, three major factors were selected as the most probable offenders:

- 1) Operators (technique of performing job)
- 2) Equipment (pumps, valves, etc)
- 3) Raw materials (solutions used, product from prior stage, etc)

Data was then analyzed to show performance of each operator. Out-of-control batches were random among operators — no specific operator could be shown as causing undesirable quality shifts.

Practical approach to the equipment factor was a program of testing

suspect valves and pumps. Results, noted below, offer reasonable assurance that variability due to equipment was reduced and probably eliminated as a major problem. This is what happened:

Month (1951)	Per Cent of Batches Meeting Control Limits
March	69.4
April	75.0
May	79.1
June	87.3

Equipment testing and replacement started in April! In the following two months, July and August, percentage of batches meeting control limits dipped to 78.8 and 64.8, respectively. Investigation showed that this was due to a raw material which was below specifications. A critical examination of compensation for raw material quality was started and while all the answers are still not known, factual data is being built up.

Current report is that this statistical quality control program is continuing to improve the product. And in addition, savings result because guess-work is eliminated in controlling process — product, once out-of-control, is brought back in line faster. Program also offers a common ground for suggestions toward improvement, keeps specifications on product and process realistic, and gives management a clearer picture and better communication with operations.

(This article is based on a report by M. H. Reploge of The Davison Chemical Corporation, Dept. CP, Baltimore 3, Md.)

**"Hot" compounds available now
without AEC authorization . . .**

offer 40 milligrams of carbon-14 labeled d-glucose directly from stock

An important step toward making radioactivity and the advantages of atomic energy generally available for peacetime use is announced by a manufacturer of radioactive chemicals and control instruments. Company is offering 40 milligrams of carbon-14 labeled d-glucose without any licensing or other delay, directly from stock. This step is being taken under US Atomic Energy Commission regulations which permit certain quantities of radioactivity in specific forms to be released without routine licensing, so that peacetime applications may be broadened.

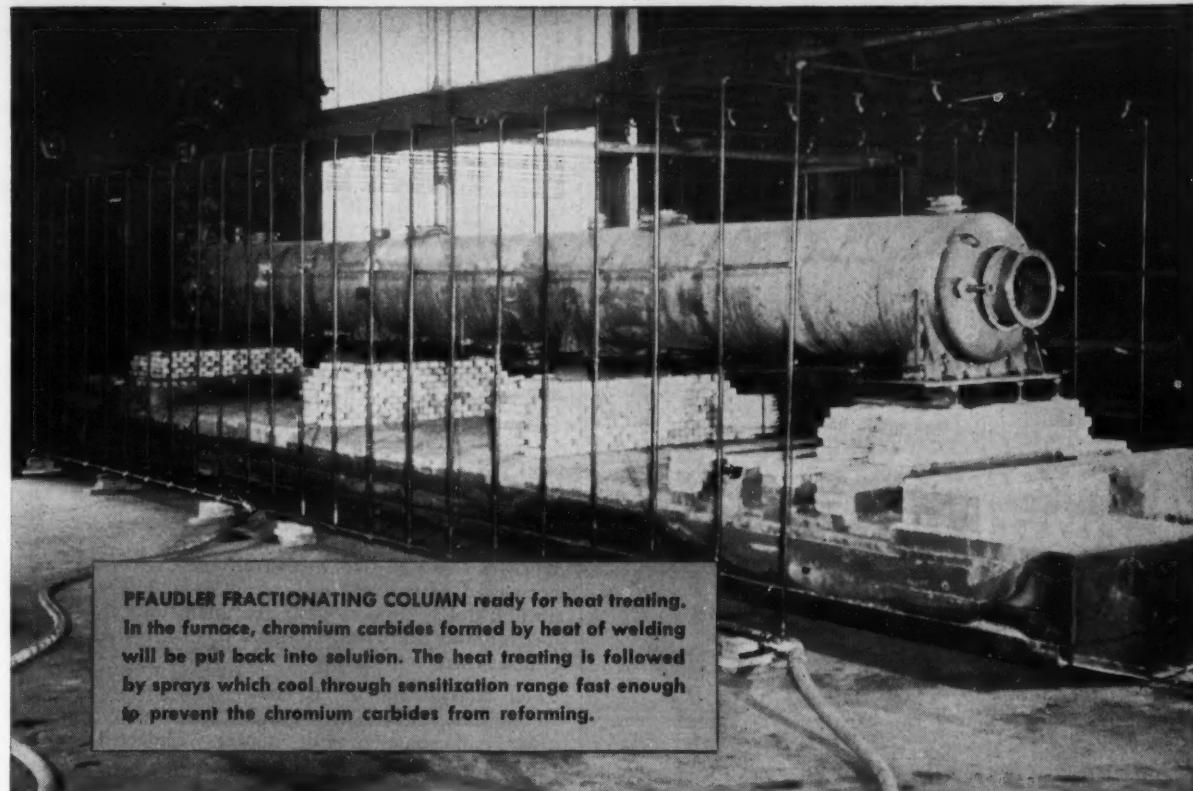
Above mentioned quantity of carbon-14 compound produces about 2 million disintegrations per minute and is adequate for various experiments and routine tests.

(Available from Nuclear Instrument & Chemical Corp., Dept. CP, 223 W. Erie St., Chicago 10, Ill.)

**Heavy duty steel stamps
will not mushroom**

Steel stamps intended for hard, constant, heavy duty are covered in 16-page catalog. Manufactured from tool steel, they will not mushroom, spall, or bend. They are cut with a 45° bevel and are hardened to 59-61 Rockwell. Stamps are accurate and sharp.

Letter, figure, and inspection stamps for lighter duty are shown as well as heavier service type. Marking dies, embossing dies, type holders, numbering machines, and, nameplate detail press are also reviewed. "Metal Stampings & Marking Devices" is issued by The Dickey-Grable Co., Dept. CP, 10302 Madison Ave., Cleveland 2, Ohio. When inquiring specify CP 3542 on handy form, pages 2 and 3.



PFAUDLER FRACTIONATING COLUMN ready for heat treating. In the furnace, chromium carbides formed by heat of welding will be put back into solution. The heat treating is followed by sprays which cool through sensitization range fast enough to prevent the chromium carbides from reforming.

Putting the heat on alloy corrosion problems

Pfaudler's extensive heat-treating facilities permit application of non-critical alloys to chemical processing equipment for highly corrosive services

Unstabilized stainless steels—when *properly heat treated*—can replace the more critical stabilized stainless steels for many chemical processing uses.

Columbium and titanium have been commonly used as stabilizing agents to overcome the decrease in chemical resistivity found in the heat affected areas of welded, unstabilized stainless steels. This decrease is caused by carbide precipitation during welding.

Proper heat treatment of the unstabilized 300 series stainless steels, however, can restore the chemical resistivity of fabricated equipment for chemical service . . . to a degree equivalent or superior to that obtained with the stabilized materials which are now critically short. And the heat-treating method is generally more economical.

PFAUDLER—with more than 25 years experience in fabricating corrosion

resistant equipment from virtually all metals and their alloys, and with unique furnace facilities for fusing glass to steel—is ideally equipped for heat treating stainless steel. Pfaudler furnaces are large enough to handle equipment up to 12' 6" in diameter and 45' 6" in length.

What is *your* corrosion problem? As corrosion engineers, Pfaudler is prepared to make an *impartial* analysis of your requirements . . . and recommendations to meet your needs economically.

For the full story on heat treating stainless steel processing equipment, write us for a copy of "Preventing Intergranular Corrosion Due to Welding Stainless"—reprinted from the March, 1952 issue of *Chemical Engineering*.

Pfaudler

GLASS-LINED STEEL • HASTELLOY • ALUMINUM • TANTALUM • CARBON STEEL • SOLID OR CLAD STAINLESS STEEL • NICKEL • INCONEL • MONEL

When inquiring check CP 3543 on handy form, pgs. 2-3

**THE PFAUDLER CO.
ROCHESTER 3, N. Y.**

*Engineers and fabricators of
corrosion resistant process equipment*

WILSONIZE TO ECONOMIZE



Here are seven good reasons why the Wilson Model R Cutter Head assures refineries and chemical plants faster, more thorough tube cleaning.

1. **Renewable Cutter Pin Bearings.** No need to replace entire cutter head when pin bearings wear.
2. **Reversible and Interchangeable.** When bearing wears on one side, just rotate it in its place for double service. When both sides are worn, it is only necessary to replace the worn bearing . . . not the whole set.
3. **Faster Cutting Speeds.** The cutter pins revolve freely, new pin bearings reduce surface wear on the wheels—less friction all around.
4. **Low, Easy Maintenance.** Self-aligning bearings are replaced with just a twist of the wrist. One nut opens the whole assembly . . . saves user's time . . . cuts downtime for tube cleaning.
5. **Self-feeding and Non-tracking . . . won't cut tube surfaces.**
6. **Extra Expansion.** The special cutter pin bearing provides for greater radial expansion . . . permits removal of deposits of more variable thickness . . . assures more thorough cleaning.
7. **Made from the "solid" . . . accurately made of alloy steel . . . greatest assurance of soundness . . . less likely to break in the tube.**

TW 808

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21-11 44th AVENUE, LONG ISLAND CITY 1, N. Y.

Representatives in all principal cities

CABLE ADDRESS: "TUBECLEAN", NEW YORK

WILSON

TUBE CLEANERS • TUBE EXPANDERS

When inquiring check CP 3544 on handy form, pgs. 2-3

Employ alkaline chlorination to continuously treat cyanide wastes

Half-million dollar treatment unit at new chemical plant must keep effluent CN-free

RECENT building of new chemical manufacturing facilities by a company brought with it the attendant problem of providing for the treatment of wastes before production could begin. After considering several methods (dilution, ponding, volatilization and use of alkaline hypochlorite) of treating the wastes, which would definitely contain cyanides, the one decided upon was alkaline chlorination in a flow-through type of system. Its selection had the advantage of having already been used extensively in the plating industry. The 1/2-million dollar process waste treatment unit at this plant incorporates numerous controls to insure that no toxic cyanides will be discharged.

Chief constituents of the waste are sulfuric acid and ammonium sulfate, with minor constituents being cyanides and some organic matter. Expected polluted volume was 3000 gpm with a cyanide concentration of 25 ppm as CN and a pH of 2.5. Installation is located in Tennessee and since discharge was to be into a stream, one of the requirements to be met was that the effluent be entirely CN free at all times.

Alkaline chlorination as applied to cyanide wastes consists of treating with caustic and chlorine or one of chlorine's alkaline compounds, the hypochlorites, at a pH of 8.5 to 9.0. Ensuing reactions convert the cyanides completely to cyanates, or cause complete breakdown of both cyanides and cyanates to nitrogen and carbon dioxide — depending upon the controls set up for the chlorination of the waste. In this instance, the cyanides needed to be converted only to the cyanates.

For convenience in description, the treatment system at this plant may be divided into three systems: caustic supply, chlorine supply and cyanide supply.

Essential components of the caustic supply system are: meter, flow controller, 5000-gal tanks (2), head tanks, and pumps (2).

A 50% caustic solution is delivered to the caustic supply system by gravity and metered as used. The flow controller proportions the 50% caustic and cooling tower water flows to give a 10% caustic solution as needed. Latter flows by gravity to one 5000-gal storage tank which supplies the head tank and the other 5000-gal storage tank.

From the head tank, a constant-level box, the 10% caustic solution flows by gravity to the cyanide destruction system, specifically to the automatic proportional control valves used for pH control. And, from the second 5000-gal tank, the 10% caustic is pumped through either of two pumps to the chlorine supply system, specifically to the proportional automatic caustic feeders for pH control.

Principal units of the chlorine supply system are: evaporators (3), chlorine pressure reducing valves (3), proportional automatic caustic feeders (3), chlorinators with injectors (3), and chlorine flow recorders (3).

Liquid chlorine is piped from a tank car storage to the evaporators and converted into gas as required. The gas is delivered to each chlorinator as needed at a constant reduced pressure by means of the reducing valves in each gas line between the evaporator and the chlorinator.

The three caustic feeders supply the 10% caustic in proportion to the chlorinator vacuum, that is, in proportion to the rate of chlorine feed on each chlorinator. This is made possible by tying the vacuum of each chlorinator in with the vacuum of its particular caustic feeder. Rate of caustic feed can be changed at any time by means of a manual dosage valve on each caustic feeder.

The three-air-operated vacuum-type chlorinators, each of maximum capacity of 6000 lb per 24 hr have their own particular function to perform in the cyanide destruction system. Each chlorinator has a chlorine flow recorder tied in with the meter vacuum which records the rate of chlorine feed in lb per 24 hr at all times during the day.

Units making up the cyanide destruction system are: pH recorder-controllers (2), mixing basin, 8-hr retention ponds (2), control basin, flow controller, 1-hr retention basin, sample pumps (3), potential recorder-controllers (3), vacuum controller, and gate valves that are motor-operated (2).

As the acid cyanide waste enters the system its pH is automatically adjusted and controlled to 8.3-8.5 by means of pH recorder-controllers. The aforementioned proportioning valves apply the 10% caustic. Between the valves and pH electrodes is a small mixing basin. This basin with its two agitators insures uniform mixing of the waste with the caustic before the waste reaches the pH electrodes.

The pH adjusted waste then enters one or the other of two 8-hr retention ponds that are used alternately on a fill-and-draw basis. As it leaves the pond, waste flows by gravity through a control basin and a flow controller.

Control basin is equipped with a float switch that shuts down the entire plant when the waste flow, for any reason, reaches some minimum level in the basin. Flow controller is actually a rate-of-flow controller which insures a fairly constant flow to the point of chlorination at all times.

Waste then passes by gravity to the 1-hr retention basin where, under normal conditions, all of the chlorination of the waste occurs before it is discharged to the stream. This basin has an inlet and an outlet baffled area.

Caustic-chlorine solution is applied to the waste rather than chlorine water alone, in the manner described above, so as to maintain the pH of the chlorinated waste at its preadjusted level of 8.3-8.5 at all times regardless of the amount of chlorine being applied.

Base chlorine load and the additional amount required to meet conditions are applied at the same place to the

waste just before it enters the 1-hr retention basin. Chlorinated waste then passes through the inlet baffled area where it is thoroughly mixed by three agitators. At outlet end of baffled area is a pump that picks up a sample and transmits it to the potential cell of the first potential recorder-controller. Potential developed controls the rate of chlorine feed through one of the chlorinators so as to maintain the proper potential in the waste at this point at all times.

Chlorinated waste after 1 hour's retention, during which time the cyanides normally have been destroyed to cyanogen chloride and completely converted to cyanates, passes through an outlet baffled area. At inlet end of this area is another sample pump and potential recorder-controller combination. Potential developed here is recorded and if at any time it falls below the level indicative of complete removal of cyanide in the waste, it transmits an electrical impulse that starts up the third or emergency chlorinator.

Waste is again mixed by one agitator as it passes through outlet baffled area before discharge to the stream. At outlet end of this area is the third potential recorder-controller which acts as a sentinel before the waste passes into the stream. If for any reason, the potential of the waste as discharge shows incomplete cyanide destruction, the controller transmits impulses which immediately shut down all chlorinators and close the motor-operated gate valves—thus preventing any of the waste from entering the stream.

Besides the controls for proper pH adjustment and chlorination of the waste, many others have been incorporated in the plant. Approximately 20 alarms are arranged on a control panel for the purpose of signaling any deficiency in air, water, caustic, chlorine, or any of the process units connected with chemical feeding.

(From a paper presented by D. C. Carmichael, Engineering Dept., E. I. du Pont de Nemours & Co., Inc., Dept. CP, Wilmington 98, Del. at the Seventh Annual Industrial Waste Conference.)

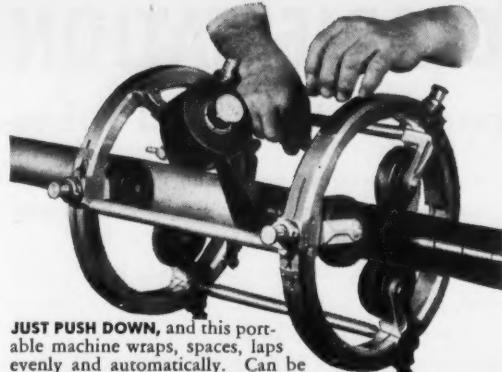
Collecting samples for study of air pollution

Publication is sixth chapter of manual on air pollution and sets forth principles and methods to be followed in collection of samples used for study of air pollution problems. It also describes various types of sampling equipment. Booklet emphasizes necessity for procuring correct sample for a particular problem. Importance of statistical techniques in obtaining maximum precision is also stressed.

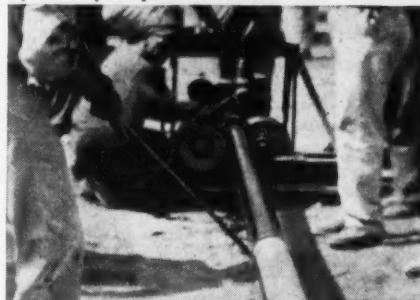
Problems of sampling in open atmosphere are indicated with reference to gases, particulate matter, odors, and meteorological factors. Detailed information is included for sampling gaseous material and particulate matter in closed systems such as stacks, ducts, and vents.

Discussion of sampling equipment cover construction and placement of sampling probes, their use in sampling ducts and stacks as well as sampling from location above ground level. Information is given on collection of gas samples with reference to absorption, adsorption, freeze-out equipment, bottle collection, and plastic bag collection. Information on collection of particulate matter is also set forth with discussion of visual and photometric methods, impingers, filters, electrostatic precipitators, and others.

Final section of chapter includes bibliography, summary of sampling devices, and illustrations and diagrams of various pieces of equipment. To obtain chapter 6 of "Air Pollution Abatement Manual," remit 75c direct to Manufacturing Chemists' Association, Inc., Dept. CP, Woodward Bldg., 15 and H St., Washington 5, D. C.



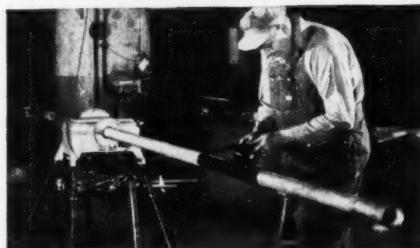
JUST PUSH DOWN, and this portable machine wraps, spaces, laps evenly and automatically. Can be operated by inexperienced workmen.



YARD WRAPPING is easy, fast and economical with this simple wrapping technique.



NO DRYING TIME with Polyken-wrapped pipe. Immediate burial.



EVEN IN CRAMPED QUARTERS INDOORS, Polyken Protective Tape Coatings are easy to apply.

TAILORED TO YOUR JOB

Polyken[®]

INDUSTRIAL TAPES

Department of Bauer & Black
Division of The Kendall Company

WRAP PIPE

up to 30 ft. per minute with

POLYKEN

Protective Tape Coatings

BY HAND OR BY MACHINE

in the plant, in the field, or yard wrapping, Polyken Protective Tape Coatings offer quick, easy, economical corrosion control.

- no liquids
- no mixing or stirring
- no heat or solvents
- no brushes, wipers, primers, thinners
- no large, expensive machinery
- no clean-up time
- no drying time



HAND WRAPPED AT THE JOB, Polyken is easily applied, even to couplings, joints and elbows. Conforms to odd-shaped surfaces.



PORTABLE PIPE MULE turns the pipe, speeds the job, cuts costs.



ON OVERHEAD PIPES ALREADY IN PLACE, Polyken wraps on quickly with this simple machine.

If you have a corrosion control problem, call on Polyken. Send in today for further information and free samples.

Polyken, Dept. CPG
222 West Adams St., Chicago 6, Ill.

Please send me specifications, samples and further information on Polyken Protective Tape Coatings.

Name _____ Title _____

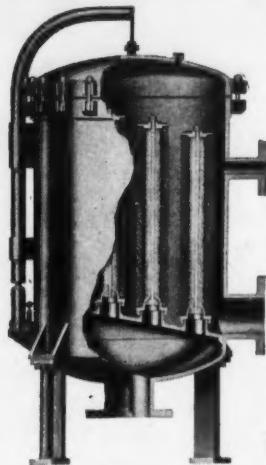
Company _____

Street Address _____

City _____ Zone _____ State _____

FOR BETTER LIQUID CLARIFICATION

... ALOXITE porous plates and tubes



This pressure filter, which employs multiple ALOXITE tubes, is made by R. P. Adams Co., Inc., of Buffalo, N. Y. It is widely used for clarifying all kinds of process liquids.

Porous Filter Plates and Tubes by

CARBORUNDUM

Trade Mark

The Carborundum Company, Perth Amboy, N. J.

Dept. S-72, Refractories Division

"Carborundum" and "Aloxite" are registered trademarks which indicate manufacture by The Carborundum Company.

When inquiring check CP 3546 on handy form, pgs. 2-3

YOU'LL WANT OUR POPULAR BOOKLET. It's the up-to-date reference source on porous media. Its 56 pages cover all fields of filtration and diffusion—including information on application, specifications, designs, installation and operation. Write for your free copy today.



IDEAS

Plastic hood reduces dust from shredding operation . . .

A vinyl curtain is mounted on a spring roller to close window opening after loading operation.

A rectangular, plastic hood has been found advantageous in protecting against dust-producing operations. Its use protects personnel and equipment.

Accompanying illustration shows hood in use suspended over a hop-shredding machine. Cover measures 11 x 4 1/2 x 8' and is equipped with a window at one end



through which an operator feeds the hops. A vinyl curtain is mounted on a spring roller to close the window opening after the machine has been loaded. Slits in the cover provide quick access. Cover is fabricated of heavy duty 8 gage film.

(Manufactured by Polo Plastics Co., Dept. CP, 325 E. Chicago St., Milwaukee 2, Wis. . . or for more information check CP 3548 on handy form, pages 2 & 3.)

Miniature pressure leaf filter exactly duplicates features of production units . . .

manufacturer can try out his product in small unit before purchasing large model

A small pressure leaf filter is now made that is the same in every detail as larger plant units. If consideration is being given to purchase of a pressure filter, product can first be tried out in miniature equipment. All of processes of filtration can be studied and determined accurately in smaller unit, thereby assuring proper selection of filters. For test runs some of material to be filtered is mixed with filter aid in pre-coat tank of test unit. Filter leaves are then coated. Flow of material is started and run for



VANCIDE OFFERS BETTER PROTECTION

VANCIDES, at low concentrations, offer positive control of bacteria, fungi, and algae.

VANCIDES are non-volatile. Their concentrations remain constant over wide temperature ranges to insure maintenance of preservative powers.

Non-toxic to humans and other warm-blooded animals, VANCIDES are neither primary irritants nor skin sensitizers and are perfectly safe to handle.

There are several VANCIDES, varying in composition and degree of solubility. When requesting samples, information regarding your particular preservative problem will aid us in making the proper recommendation. Write today for information and samples.

R. T. VANDERBILT CO.

SPECIALTIES  DEPARTMENT

--230 PARK AVENUE, NEW YORK 17, N. Y.--

- Please send VANCIDE Bulletin 120
- Enclosed are details of my preservation problem, please send sample of recommended VANCIDE

NAME _____

POSITION _____

(Please attach to, or write on, your company letterhead)

When inquiring check CP 3547 on handy form, pgs. 2-3



Miniature filter is available for test runs

full cycle. Product to be filtered can be drawn from a tank or taken from a by-pass on main production line. Test filter is said to duplicate operation of plant units so closely that all factors including filter media can be investigated and carefully measured. Miniature filter is available at any time for test purposes.

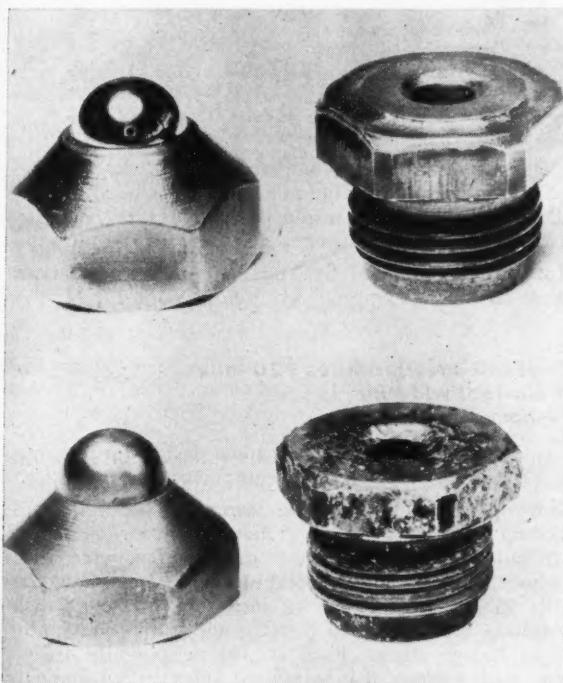
(Courtesy of Hercules Filter Corp., Dept. CP, Patterson, New Jersey.)

**Prolong life of ball and seat
in oil well gas lift
flow valves . . .**

tungsten carbide material resists salt water corrosion and high pressure gases to 1000 psi

Valve ball and seats in oil-well gas lift flow valves must resist salt water corrosion and abrasive-laden, high velocity, high pressure gases varying from 400 to 1000 psi. Selection of material that will withstand these severe conditions is a problem recently solved by two gas lift valve manufacturers. Each firm has specified and standardized on Carboloy cemented tungsten carbide for valve ball and seat material.

Tests conducted by manufacturers have shown that tungsten carbide parts stand up much longer in operation under abrasive conditions than any other ball and seat material. Inspections after periods of operation



Carboloy tungsten carbide ball and seat (top) which has been in operation several months is compared with Monel ball and seat (bottom) in operation several days

up to one year reveal no measureable wear of material, while it yields consistent performance. Further evidence of wear properties of Carboloy valve parts is shown in illustration. Carbide valve ball and seat at top have been in continuous flow operation with high pressure abrasive-laden gases for several months. Monel ball and seat at bottom have been in operation for few days. (Information supplied by Carboloy, Division of General Electric Company, Dept. CP, Detroit 32, Mich.)

A problem with **BINDERS?**

PERHAPS IT CAN BE SOLVED

WITH "ELVACET"

polyvinyl acetate emulsions

Profitable uses for

"ELVACET"

Polyvinyl Acetate Emulsions

- Coatings
- Binders and Mastics
- Textile Finishes
- Water System Paints
- Primer Sealers
- Seepage Sealers

Important properties of

"ELVACET"

Polyvinyl Acetate Emulsions

Uniformly dispersed in water.

High solids, with no modifiers, but readily compounded to desired viscosity, pigmentation and plasticization.

Readily modified with starches, dextrans, resins, waxes, etc.

Highly stable towards settling or separation over long periods.

Suitable for use in manufacture of food containers.

"Elvacet" resin emulsions can solve many binder problems where high strength and stability are important factors . . . where costs must be held to a minimum. "Elvacet" binders feature excellent film-forming and thermoplastic adhesive properties and can be used for a wide variety of porous and non-porous substances, including paper pulp, ground cork, textile fibers and sand. In addition, "Elvacet" binders are stable to light and oxidation . . . are resistant to water, oils and aliphatic hydrocarbons . . . and exhibit excellent ageing characteristics.

**"Elvacet" binders are easy
and economical to use**

"Elvacet" is an easy to handle, high solids content, water emulsion. It does not require the use of hot melts or expensive solvents . . . can be used "as is" or readily diluted, thickened, plasticized or otherwise compounded to give special effects. Conventional heat and pressure molding practices are used to produce finished forms, although air drying after cold pressure molding is a feature in some cases.

**How "Elvacet" binders work
in the field**

Strong durable sheets, containers and

other objects can be made from a wide variety of materials, including wood flour, leather scrap, asbestos, ground cork, textile fibers, clay, sand and plaster of Paris . . . "Elvacet" binders for non-woven fabrics do not discolor or lose bonding strength in sunlight, atmosphere or shelf storage . . . "Elvacet" emulsions, modified with fillers or plasticizers, produce stable and highly adhesive mastics, leveling compounds and joint compounds for ceramic and plastic tile, linoleum, metal, wood and cork.

We'll be glad to supply technical advice and assistance in the adaption of "Elvacet" emulsions to meet your specific requirements. The coupon below will bring you complete information. E. I. du Pont de Nemours & Co. (Inc.), Electrochemicals Department, Wilmington 98, Delaware.

DU PONT "ELVACET"



150th Anniversary

Better Things for Better Living
... through Chemistry

**MAIL THIS
COUPON FOR
COMPLETE
INFORMATION**

Please send me more information on "Elvacet"—properties, uses, methods of application, etc. I am interested in using "Elvacet" in the following applications:

- Coatings
- Binders and Mastics
- Textile Finishes
- Seepage Sealers
- Water System Paints
- Primer Sealers

E. I. du Pont de Nemours & Co. (Inc.)
Electrochemicals Department
Wilmington 98, Delaware

Name _____

Position _____

Firm _____

Address _____

City _____ State _____

When inquiring check CP 3549 on handy form, pgs. 2-3



Chemical Specialties?

Here's how
GAULIN
 Homogenizers
 improve them

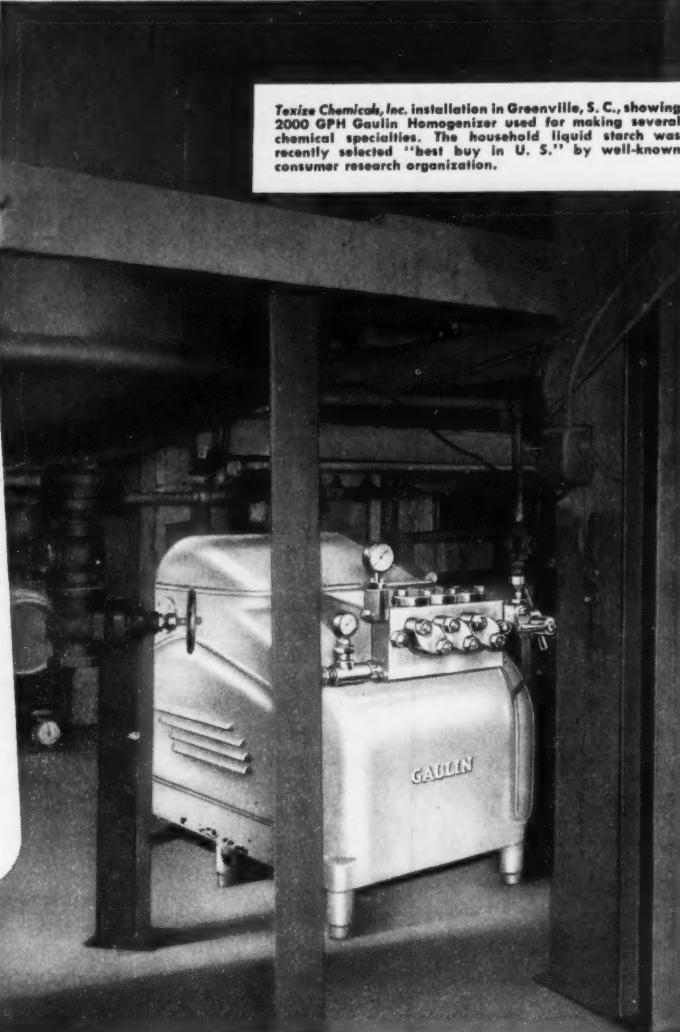
LIQUID STARCHES — A Gaulin improves transparency. Stops separation and clouding.

EMULSION CLEANERS — Steps-up cleaning action. Makes them stable and perfectly uniform.

LIQUID SOAPS — Gives a finer, more uniform suspension. Improves clarity. Stops tendency to gel.

POLISHES — Improves appearance and performance. Lengthens shelf-life.

WAX EMULSIONS — Increases gloss. Adds stability and shelf-life.



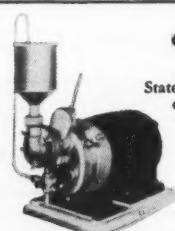
What's more, Gaulin Homogenizers make these emulsions and dispersions **FASTER, MORE ECONOMICALLY**, as well as uniform and stable.

Discover what a Gaulin Homogenizer can do for your product. Our complete testing facilities and experience in practically every field will help supply the answer without charge or obligation. Investigate today.



GAULIN PILOT PLANT HOMOGENIZER

Ideal for experimental purposes, operation or process requiring up to 25 gallons per hour capacity. Handles quantities as small as one pint. Available on low rental basis.



GAULIN TWO-STAGE COLLOID MILL

Stator is jacketed for cooling or heating. Gap setting adjustable for .001" to .045". Only 45 seconds clean-up required in changing colors. 12" head room. 12" x 17" floor area.



Manton Gaulin MANUFACTURING COMPANY, INC.

55 GARDEN STREET, EVERETT 49, MASS.

World's largest manufacturer of Homogenizers, Triplex Stainless-Steel High Pressure Pumps, and Colloid Mills

When inquiring check CP 3550 on handy form, pgs. 2-3

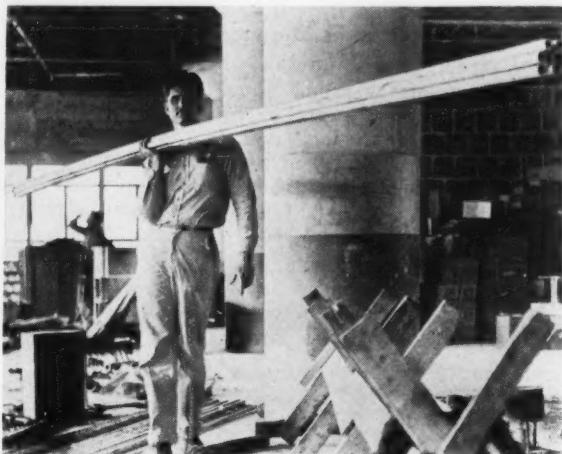
IDEAS

Distilled water system uses aluminum piping . . .

not corroded by distilled water and is said to cost less than materials previously used

It is safe to say that as few as ten years ago most plumbers had never so much as handled a piece of aluminum pipe or equipment. However, the California Packing Corporation has included an aluminum piping system for distilled water.

The job is a plumbing installation for a 12,000 sq ft research laboratory. One workman is able to carry a dozen 12' lengths of $\frac{3}{4}$ " pipe, which have notable prop-



Workman is able to carry a dozen 12' lengths of $\frac{3}{4}$ " aluminum pipe

erties such as lightness, workability, and conductivity. According to report, aluminum is not corroded by distilled water and is considerably less expensive than materials formerly considered necessary for this purpose.

(Information supplied by The Aluminum Association, Dept. CP, 420 Lexington Ave., New York 17, N. Y.)

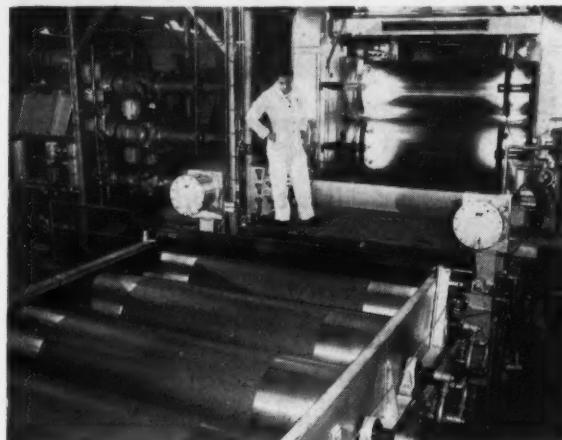
Vinyl calender produces 120 miles of six-foot wide film in 24-hour day . . .

Goodyear installation has some design features not found in other types of equipment

Now operating at Goodyear Aircraft Corporation in Akron, Ohio, is a calender that produces more than 120 miles of vinyl film, more than six feet wide, in a 24-hour day. The four-roll, inverted-L-type unit has rolls 92 inches wide by 32 inches in diameter, each weighing around 25,000 pounds, and can produce film up to 20 mils thick. Rolls are the peripherally drilled type, with a series of longitudinal holes drilled immediately beneath the surface. High-pressure hot water — used for controlling the roll surface temperature — is circulated through these holes. Automatic temperature control assures that the entire roll face is held at 325 degrees.

Machine was built by Adamson-United Company of Akron, who also did the designing. However, engineers of Goodyear Aircraft cooperated in developing certain design features not existent in other types of similar equipment.

Accessory equipment includes embossing equipment of the dual type, a multiple-drum cooling unit, and an



Vinyl film is rolling off this calender at rate of 120 miles per 24-hour day

automatic turret type windup. Embossing equipment is suitable for handling in-train embossing of various gages of materials at high speed. The turret windup is completely automatic so that the operator is required only to replace the full rolls with empty cores.

A yardage counter gives an electrical signal when a preset yardage has been wound, after which rotation of the turret, cut-off, and starting of the web on the new core are done completely automatically.

An electronic metal detector is arranged so that "contaminated" material is ejected before it can enter the calender and damage the rolls.

(Information courtesy of The Goodyear Tire & Rubber Company, Dept. CP, Akron, Ohio.)

Laboratory will tell you if infrared methods can do the analysis . . .

research or control problems are invited for test run before infrared is applied

Announcement is made of a laboratory devoted to studies of the practicability of infrared analysis techniques to specific problems. Companies and research institutions interested can have an estimate made of feasibility of methods for their particular use without charge. They are invited to state their problem, and if it appears promising, samples can be sent to laboratory. Studies will be made and a report submitted. From this a decision may be reached concerning purchase of an instrument and committing of manpower to future infrared projects.

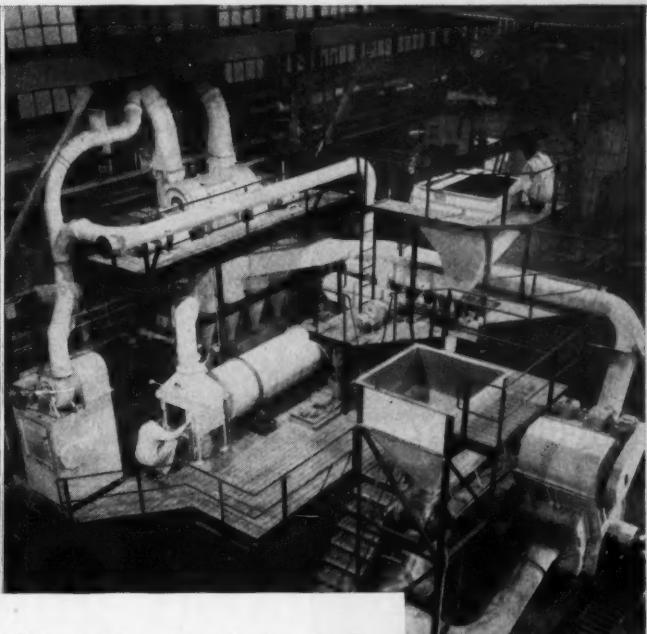
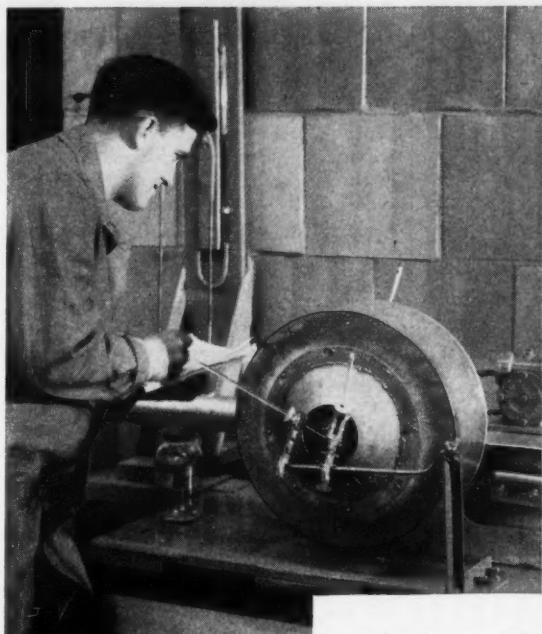
In some cases, arrangements may be made to complete study at laboratory. Where more extensive analyses are needed, company may rent an instrument and carry out program on its own plant. A percentage of rental fee may be applied to purchase of an instrument. Laboratory also has equipment for evaluation of flame photometry and electrophoresis apparatus.

Manufacturers, in even quite small plants, have increasingly started using infrared methods and found them to be of considerable value. Laboratory discussed here will make it easier for others to investigate possible use of infrared.

(Courtesy of Perkin-Elmer Corporation, Dept. CP, Norwalk, Conn.)

AN INVITATION to manufacturers with drying, cooling or roasting problems...

LINK-BELT will test a pound or a ton of your material



Take advantage of Link-Belt's complete, modern laboratory — send us a sample of your material. We've miniature equipment for small batches . . . full-scale facilities for large runs.

Whatever size the sample, we will test-run your material, work out procedures in this laboratory that can be duplicated in your plant

If your production has been delayed or handicapped by drying, cooling, or roasting obstacles, there's an easy, no-obligation way you can get an immediate answer . . .

Follow the lead of hundreds of others who have utilized Link-Belt's scientific laboratory to test-run their materials. As a result of this testing and research, scores of different materials are now being processed by Link-Belt Dryers installed all over the world.

And here's an added Link-Belt service — if you can't ship samples, we'll put a unit on loan right in your own plant. Find out how you can put these Link-Belt services, plus Link-Belt experience, to work for you. Call the Link-Belt plant or office nearest you.

LINK-BELT COMPANY: Chicago 9, Indianapolis 6, Philadelphia 40, Atlanta, Houston 1, Minneapolis 5, San Francisco 24, Los Angeles 33, Seattle 4, Toronto 8, Springs (South Africa). Offices in principal cities.

12,424

When inquiring check CP 3551 on handy form, pgs. 2-3



LINK-BELT
THE POWER OF MOTION
L-B

**DRYERS
COOLERS
ROASTERS**



Starting Current Reduced!

Reduced from 400 Amps to 180 Amps

placed more elaborate equipment.

Twin Disc HYDRO-SHEAVE Drive

A material reduction in current demand for starting heavy loads is one advantage many plants report from the installation of Twin Disc HYDRO-SHEAVE Drives.

Take this cullet crusher operated by Diamond Glass Company, Royersford, Pennsylvania. Starting current was reduced from 400 amps to 180 amps. Running current was reduced from 40 amps to 18 amps. Moreover, a 15 hp motor replaced the original 25 hp—and a plain across-the-line starting switch re-



Clutches & Hydraulic Drives



TWIN DISC CLUTCH COMPANY, Racine, Wisconsin • HYDRAULIC DIVISION, Rockford, Illinois

BRANCHES: CLEVELAND • DALLAS • DETROIT • LOS ANGELES • NEWARK • NEW ORLEANS • SEATTLE • TULSA

When inquiring check CP 3552 on handy form, pgs. 2-3

IDEAS

Sulfur dichloride vapors dry heavy coatings in only a few seconds . . .

continuous process presents little fire hazard since no heat or flammable solvents are employed

Protective or decorative coatings of ink, paint, or varnish can be dried in a few seconds by a technique developed by The Meyercord Co., Chicago, Ill.

The continuous process, called the Chem-Dry Process, is quite flexible in that the same machinery can harden a wide variety of coatings. Fire hazard is lessened because there is less material in process than with conventional methods, and no heat or flammable solvents are used. Other advantages: coating can be applied in thicker layer; coated material can be stacked or packed directly after hardening machine.

In operation, coated material from printing, brushing, spraying, or dipping is conveyed into a chamber through which a mixture of sulfur dichloride and air is circulated. The sulfur dichloride vapor reacts with and hardens the drying oils and resins. Concentration is maintained at such a level that the coating will be completely dry in a few seconds. Vapors adhering to the material are removed before the material leaves the chamber. No vapors leak into the surroundings; all exhaust from the system is scrubbed to remove any remaining vapors.

Reports are that the process gives excellent results except for cases where humidity within the machine must be closely controlled.

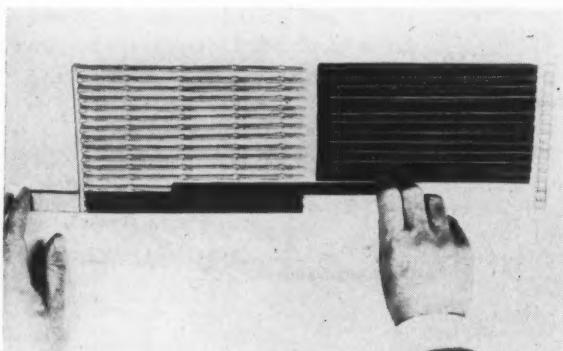
(Exclusive licensing agent is H. L. Barnebey, Dept. CP, PO Box 144, Pittsburgh 30, Pa. . . or for more information check CP 3553 on handy form, pages 2 and 3.)

Incorporate six improvements to prolong service life of storage battery . . .

silver alloy grid metal and non-corroding positive-plate sealer feature industrial product

Effective service life of an industrial storage battery used for railway, motive power and other heavy-duty service is expected to be prolonged through six improvements. These include a new silver alloy grid metal — Silvium, non-corroding permanent positive-plate tube sealer, seamless shock proof jar, unbreakable plastic vent plugs, and corrosion and impact resistant plastic steel tray coating.

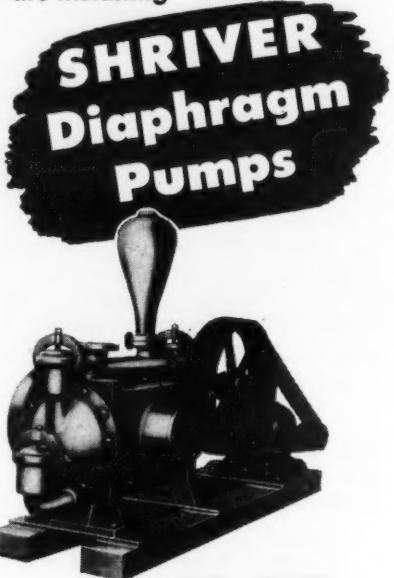
Corrosion of the positive-plate grid is one of the leading causes of battery failure. Introduction of Silvium in the construction of the grid of the improved Exide



An Ever-Growing Number of Plants Pumping

- ✓ Slurries • Sludges
- ✓ Corrosive • Abrasive
- ✓ Viscous • Thick
- ✓ Heavy • Valuable
- ✓ Delicate or Hazardous Materials

are installing



TO CUT Operating and Maintenance Costs

Because in this double reciprocating, positive action pump, heavy rubber or synthetic rubber diaphragms separate the liquid ends (and the materials handled therein) from the working mechanism. Thus, there can be no wear of the lubricant-immersed mechanism or contamination of the fluid. No packings, no leakage, no waste of materials, nuisance or hazards. Replacements and maintenance are minimized.

Liquid ends may be made of any metal or lining; pressures to 100 p.s.i.; capacities to 90 g.p.m. Hundreds of users' reports emphasize that Shriver Diaphragm Pumps "can really take it" and last longer.

Write for Bulletin No. 126

T. SHRIVER & CO., Inc.
846 Hamilton St. • Harrison, N. J.

When inquiring check CP 3554
on handy form, pgs. 2-3

CHEMICAL PROCESSING

Ironclad battery reduces the corrosion factor and assures a longer positive grid life. Silvium is an alloy of silver, lead and other components.

A very efficient method of active material retention used in this battery is the positive-plate plastic sealer. The grid is made up of metal core rods which are inserted in slotted hard rubber tubes. Active material is then packed into the tubes surrounding the rods. Slots in the tube permit free access of the electrolyte to the active material, but they are fine enough to prevent it from washing out.

Bottoms of the tubes were formerly sealed with an alloy bar. After considerable service life, however, corrosive action on this metal bar closing the tube bottoms would eventually breach the seal. Active material would then seep out and be deposited in bottom of container.

Introduced in this battery is a tube sealer made of polyethylene plastic. It is molded in a single bar with a plug projecting for each tube to effectively seal it at the bottom against loss of active material.

In addition, polyethylene is an insulating material. Extending across the entire bottom of the plate, it acts as a safeguard against shorting between plates. Elimination of metal at the bottom of the positive plates assures better negative plate performance because of low local action and the reduction or elimination of shedding of active material.

(Exide-Ironclad batteries are available from The Electric Storage Battery Co., Dept. CP, P.O. Box 8109, Philadelphia 1, Pa.)

Bi-colored lens for workers exposed to intense visible light, ultraviolet or infrared radiations . . .

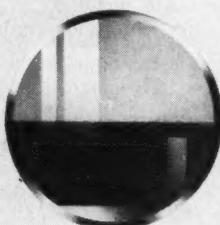
has strength of single lens and can be replaced in half the time previously required

One-piece bi-colored lens has been designed by American Optical Company for workers exposed to intense visible light, ultraviolet and infrared radiations. Where one half of integral lens meets other half, there is no

junction that might collect dirt or foreign matter and obstruct vision. Light streaks are avoided and reflections cannot distract, annoy or endanger worker.

Hardened for utmost impact protection, lens has strength of a single lens and can be replaced in less than half the time previously required. Lens is beveled to fit metal or acetate spectacle goggles and cup-type goggles. They are available in varying shades with both flat and six curve in the following half and half combinations: Cobalt-clear, Noviweld-clear, Calobar-clear, Noviweld-Calobar, and Noviweld-Noviweld.

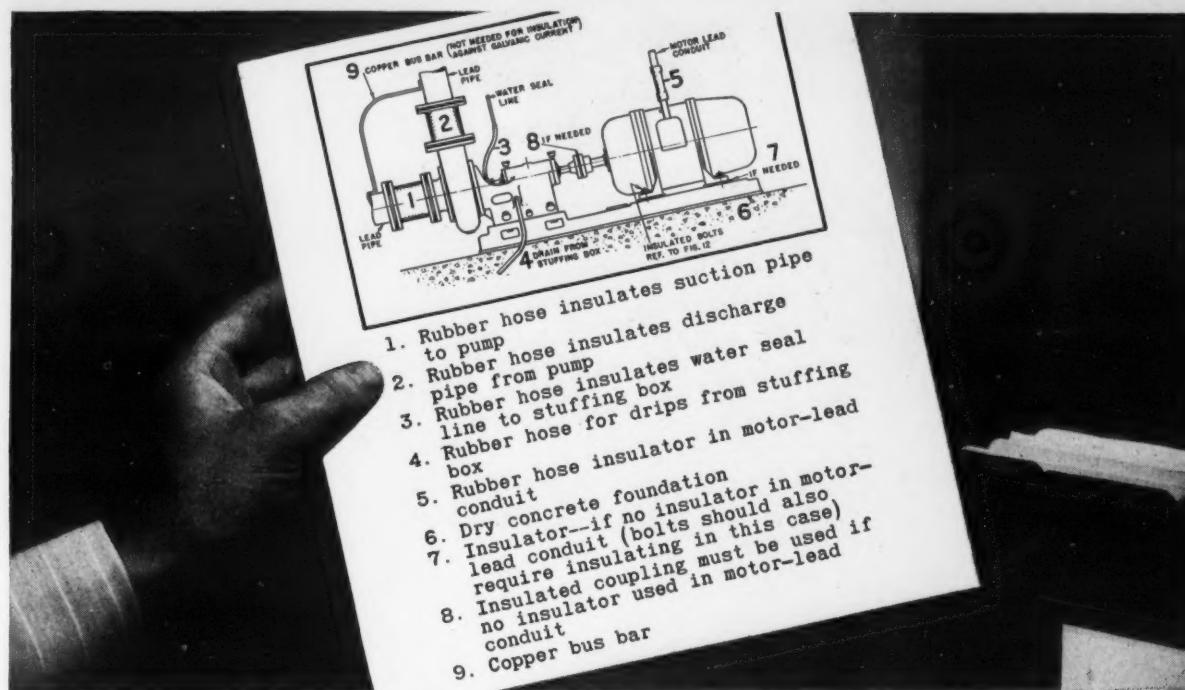
(Information received from American Optical Company, Dept. CP, Southbridge, Mass.)



Bi-colored lens has no junction that might collect dirt and obstruct vision

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(Information received from American Optical Company, Dept. CP, Southbridge, Mass.)



ANOTHER CASE STUDY FROM THE WORTHINGTON FILES. This data sheet from the Worthington files indicates points at which an alloy pump should be insulated in order to eliminate stray-electric-current corrosion in an electrolyte circulating system. The solution to this problem was arrived at

from very careful consideration and investigation by Worthington engineers working in conjunction with the pump user. The resulting installation—made some eleven years ago—was one of the first in the world where alloy (Worthite) pumps were used to circulate an electrolyte.

Another Pumping Problem That Called For More Than a Pump!

A check of the Worthington files would uncover many stories like this one. They're the best evidence we have of the "extras" you get with every Worthite pump.*

About eleven years ago Worthington specialists solved this problem of protecting pumps from stray current corrosion. As a result, Worthite pumps were installed in the manner illustrated above in the data sheet.

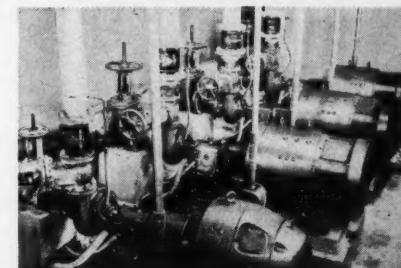
Today, after examination, there is practically no corrosion on the pumps. A life of 20 to 30 years is indicated for these Worthite pumps. Maintenance costs are a fraction of what they had been before. And the Worthite units required only 40 hp as compared to 75 hp for previously used (lead) pumps. They still deliver more electrolyte and have not fallen off

in capacity after eleven years service.

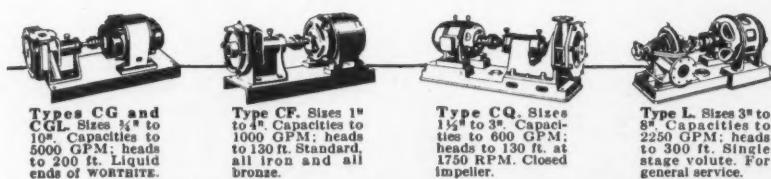
During the same eleven years, copper and zinc refineries everywhere in the world have been specifying Worthite pumps for electrolyte circulation. Old refineries now modernize with them. Once again, Worthington's 111-year experience with pumping equipment helped to solve a tough problem for industry.

At Worthington, we'd like to hear about your pumping problems. Write Worthington Corporation, formerly Worthington Pump and Machinery Corporation, Centrifugal Pump Division, Harrison, N. J.

*Reg. U. S. Pat. Off.



THIS ALLOY PUMP INSTALLATION FOR ELECTROLYTE CIRCULATION is comprised of these Worthite centrifugal pumps, 6-in. discharge by 8-in. suction. They circulate copper sulfate electrolyte and have been in service for eleven years without any indication of stray-electric-current corrosion. Note how pumps are insulated.



Types CG and CGL. Sizes $\frac{3}{4}$ " to 10". Capacities to 5000 GPM; heads to 200 ft. Liquid ends of WORTHITE.

Type CF. Sizes 1" to 4". Capacities to 1000 GPM; heads to 130 ft. Standard all iron and all bronze.

Type CQ. Sizes $\frac{1}{2}$ " to 3". Capacities to 600 GPM; heads to 130 ft. at 1750 RPM. Closed impeller.

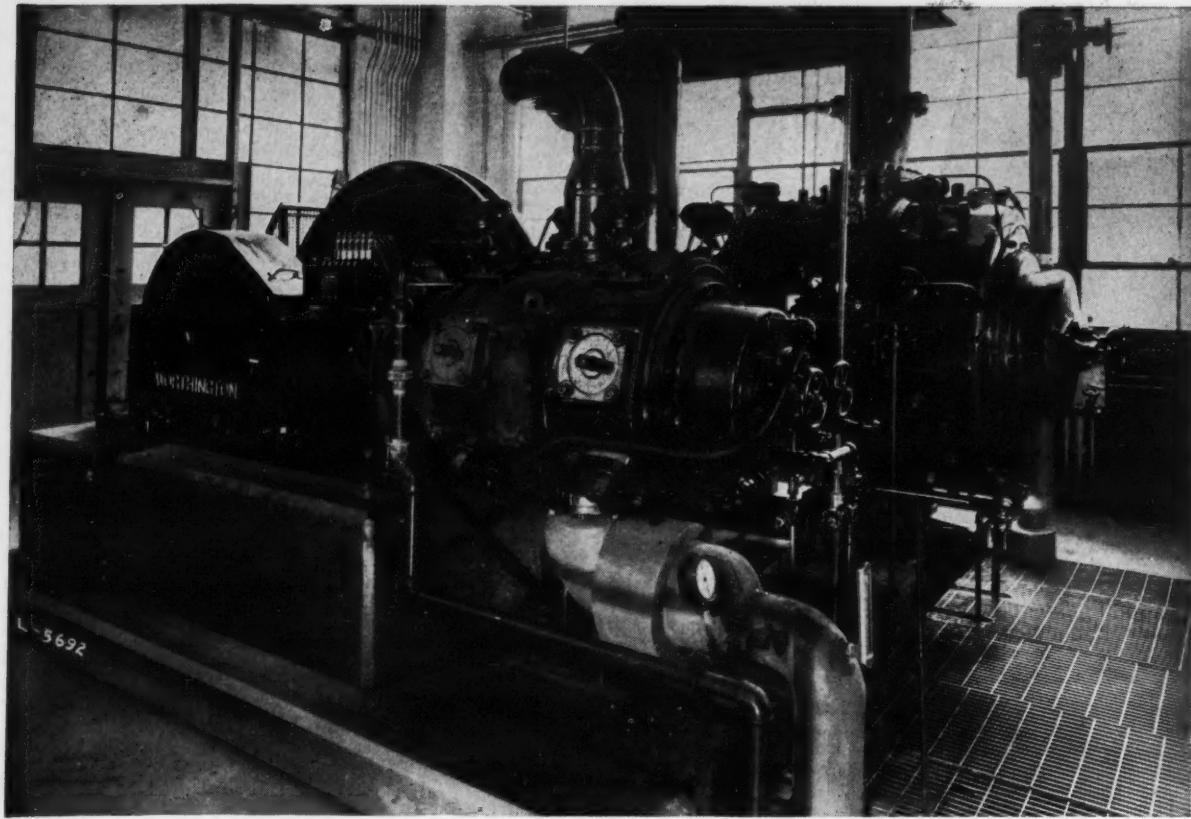
Type L. Sizes 3" to 8". Capacities to 2250 GPM; heads to 300 ft. Single stage volute. For general service.

The World's Broadest Line Assures You the Right Pump for Every Job

When inquiring check CP 3555 on handy form, pgs. 2-3

WORTHINGTON

Centrifugal Pumps



One of over 300 compressors purchased by the same chemical company. It's a Worthington DC-2 gas compressor.

What One Word—Here— Solved Over 300 Compressor Problems?



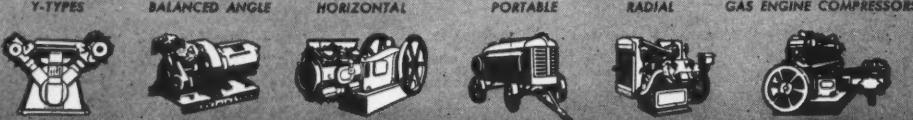
Over 300 times in the past ten years, a mid-western chemical company has had a compressor problem.

Sometimes the problem involved a small compressor, sometimes a giant. All types of drives. All types of applications—including pulling a vacuum. Almost invariably, they solved the problem with one word—"Worthington".

To help solve your compressor problems, Worthington offers more compressors for compressing more gases than any other manufacturer.

*Reg. U. S. Pat. Off.

NO OTHER
COMPRESSOR
WILL
OUTPERFORM
A
WORTHINGTON



When inquiring check CP 3556 on handy form, pgs. 2-3

IDEAS

Tramrail section yields savings of 29 per cent in weight over old section . . .

permits handling of 500 to 1000 lb rolling live loads, in addition to heavier demands

A tramrail section has been announced by Forker Corporation, which is reported to afford a savings of 29% in weight over the old section. Teerail is designated as B-2800 and weighs 6.9 lb/ft as compared to 9.6 lb/ft for former Ohio Teerail section. Primary weight economy is obtained by reducing the web height so that height from top of bead to bottom of flange is $2\frac{5}{8}$ ".

Teerail B-2800 may be used for light handling requirements of 500 to 1000 lb rolling live loads, in addition to heavier demands up to 6000 lb. Rail is produced from open hearth billets of tough, high carbon, high manganese steel.

The rail is available in 20' lengths, standardized to fit most factory layouts utilizing 20' bays.

Width of tread of Teerail is $3\frac{19}{64}$ " which is same as original section and also the heavier Beamrail sections. By maintaining same tread width, this rail may be tied in with existing systems where plant expansions are planned or it may be used with heavier Beamrail installations.

Load factors are controlled by two design elements, which include support bolt spacing from 15 to 150" maximum. Selection of four-wheel trolleys and crane end trucks with wheel bases ranging from 4 to 72" are available to distribute the load for optimum relationship between track rolling live load, trolley wheel base, and support bolt spacings. This versatility enables loads to be distributed as needed to the capacity of available ceiling joists. Thus, tramrail installations can be adapted to buildings of otherwise inadequate strength, without resorting to elaborate superstructure.

(Information received from Forker Corporation, Dept. CP, 2066 Random Rd., Cleveland 6, Ohio . . . or for more information check CP 3557 on handy form, pages 2 and 3.)

Like Ol' Man River and the caissons,
loads jes' go rolling along
well-kept conveyor . . .

installation, adjustment, alignment, and loading care give systems increased service, low maintenance

Recent study directed by prominent belting engineer stresses important part played by belt conveyors in cutting materials handling costs through proper installation, adjustment, alignment, and correct loading methods, especially. Since loading conditions are considered to be one of the most important factors determining rate of belt wear, the study points out the necessity for analyzing existing and/or proposed conveyor installations to assure best possible loading conditions.

In the main, the study reveals seven major suggestions for proper loading of belt conveyors, both the smaller, portable units and the larger, longer systems. These are listed as:

1) material being loaded should be moving in the same direction and at the same speed as the belt or the belt will wear excessively because of abrasion created at the loading point. 2) Cushion lump material with a pre-laid layer of fines for protection against bruising. 3) Control velocity of loading-material flow by pitching the chute properly (iron baffle or wooden bars can be used to reduce speed of material flow on to belt).

4) Falling distance between chute and belting should be minimized to prevent excessive speed of material-flow which might cause belt damage. 5) In no instance should a material strike the belt directly above a solid pulley since this action will soon make the belt unusable. 6) To prevent material from escaping under skirt-boards, chute should be located so that loading material will strike the belt far enough ahead of tail pulley to allow insertion of at least one belt-stabilizing carrier pulley. These carrier pulleys should be spaced more closely around the loading zone because of the impact loading of the belt at that particular point.

7) Construction of skirt-boards and flexible skirts should be carefully considered. Skirt-boards should be long enough to settle material before it leaves the loading area. Flexible skirts preferably are improvised from rubber-covered edges of belting remnants.

(Information supplied by the Thermoil Company, Dept. CP, 400 Whitehead Rd., Trenton, N. J.)

Describe automatic method for analyzing flame resistance of acoustical materials . . .

temperatures to which they are subjected are recorded to provide permanent test record

Reportedly the first automatic method, a research group under the sponsorship of the Acoustical Materials Association recently announced a new procedure for measuring flame resistance of sound conditioning materials. That it offers a high degree of scientific precision is indicated by the fact that the technique meets requirements of the Bureau of Standards.

Briefly, it consists, first, of removing the moisture from samples of acoustical materials in a cabinet which is maintained at room temperature. After the humidity of all samples has been lowered to 10% by automatically-controlled equipment, the pieces of material are then placed in another constant-temperature cabinet, where the humidity is maintained at 35%.

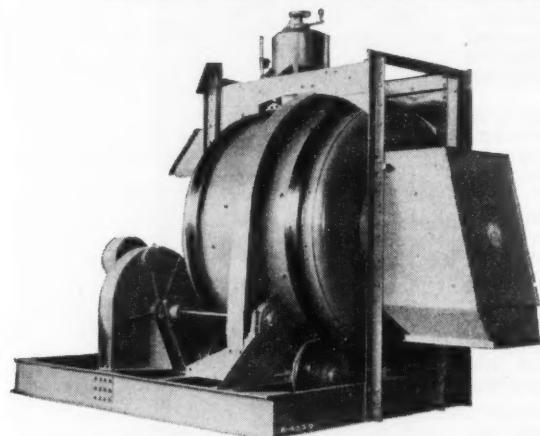
After a specified period, the samples are removed, arranged in a square on a fireproof framework, and the center sample of the square is placed directly over an automatically-controlled gas flame. The flame temperature is gradually increased by means of control equipment to a peak temperature, kept there for a predetermined period, and then decreased — all automatically. Temperatures to which the acoustical materials are subjected are recorded automatically — providing a permanent record of test conditions.

After subjecting the samples to the flame, they are removed and a photograph of the square of samples is taken. In that manner the exact degree to which the center sample — as well as any other — has suffered may be determined by comparison with surrounding samples of identical size.

(Information courtesy of Illinois Institute of Technology, Chicago 16, Ill.)



He can't stand that slow mixing cycle!



A WORTHINGTON CHEMICAL MIXER, a unique machine incorporating all the features and advantages brought about during nearly a century of experience in designing and building mixers for all purposes. Chemical mixers equipped with measuring tank for use in various chemical applications. Standard sizes to 110 cu ft or 8 tons per batch.



Hold it, bud. There's an easier way out! We've got a mixer than can boost your daily output as much as 10 per cent. It's the Worthington chemical mixer with engineered blade design — a mixing action that's faster than any we know of. It saves time with every batch, mixes thoroughly, and eliminates these other big problems as well:

THE CORRODED DISCHARGE CHUTE—The Worthington discharge chute is out of the mixer during mixing time. Proper balance makes manual control of chute easy. Pneumatic controls also available.

THE WOBBLY DRUM ROLLER—Worthington drum rollers are of genuine carwheel metal, ground to exact diameter. Compensation for wear to permit perfect centering is accomplished by easy adjustment of drum-roller shafts.

THE HEAVY HORSEPOWER CONSUMER—Worthington's clean, anti-friction construction with specially designed parts assures minimum possible horsepower consumption.

YR.2.6

SEND THIS COUPON TODAY to learn more about how to reduce mixing time with a Worthington chemical mixer.

Worthington Corporation
formerly Worthington Pump and Machinery Corporation
Industrial Mixer Division
Plainfield, New Jersey

NAME.....

POSITION.....

ADDRESS.....

CITY..... ZONE..... STATE.....

When inquiring check CP 3558 on handy form, pgs. 2-3

The Ten Leading Makes Of Vertical Turbine Pumps Indicates Feature Is Standard										
Standard Features	Worthington	Pump A	Pump B	Pump C	Pump D	Pump E	Pump F	Pump G	Pump H	Pump I
Seals above and below drain ports (oil-lubricated model)	✓				✓					
Wearing rings	✓				✓			✓		
Enclosed impellers	✓	✓	✓	✓	✓	✓		✓	✓	✓
Bronze bushings in bowl assembly	✓		✓	✓	✓	✓		✓	✓	✓
Flanged and bolted bowls on all sizes	✓						✓		✓	✓
Sand collars at both ends of bowl assembly (water-lubricated model)	✓	✓								
Grease-packed bottom bearing	✓	✓		✓						
Choice of oil or water lubrication	✓	✓	✓	✓	✓	✓	✓		✓	

CHECK WORINGTTON AGAINST THE REST

Only Worthington has all 8 vital design features as standard equipment.

Have you ever considered a vertical turbine pump for your industrial applications?

If you haven't, you may be missing a good bet.

For many years the vertical turbine pump was thought of as having only one application—deep well pumping. Recently, however, this efficient liquid handler has been given many other jobs, so that today we're not sticking our necks out when we say: it's an extremely *versatile* pump.

Let's take a look at the four inherent characteristics that make this pump really *versatile*:

1. THE DRIVE UNIT IS REMOTE AND SEPARATE FROM PUMPING ELEMENT. The pump always operates submerged. No priming. No expensive dry pits. No suction or NPSH problems.

2. SPACE REQUIREMENTS AT A MINIMUM. Because of its vertical design, the vertical turbine pump takes less floor space than other types.

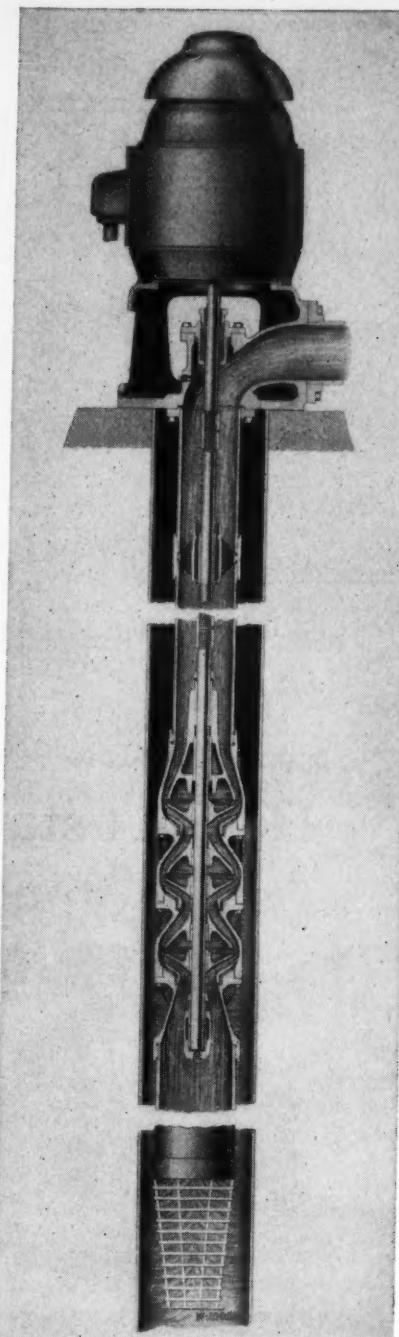
3. MECHANICAL AND HYDRAULIC FLEXIBILITY. Will operate with any

type of drive. Discharge can be positioned to user requirements. Can be close coupled or several hundred feet long. Meets head and capacity requirements by varying the number of duplicate stages.

4. IT'S A SIMPLE MACHINE. Unidirectional thrust minimizes alignment problems. Easy maintenance, few moving parts, little friction, long life.

If you think a Worthington vertical turbine might be your answer to a pumping problem, or if you're not quite sure about it—we'd like to hear from you. Remember, Worthington, as the oldest manufacturer of pumping equipment, has the newest and broadest line of vertical turbine pumps.

Send complete data on your application mentioning capacities. Worthington Corporation, formerly Worthington Pump and Machinery Corporation, Vertical Turbine Pump Division, Denver 16, Colorado; Succasunna, N. J.



TYPICAL SECTION of the Worthington water-lubricated vertical turbine pump that gives most efficient pumping performance at lowest possible cost.

D.1.11

WORINGTTON



Vertical Turbine Pumps

The World's Broadest Line Assures You The Right Pump For Every Job



CENTRIFUGAL

ROTARY

STEAM

POWER

VERTICAL TURBINE

When inquiring check CP 3559 on handy form, pgs. 2-3

IDEAS

Pipe pressure testing to 80 per cent of yield is offered to industry . . .

automatic, one-button operation determines worth of tubing and casing as high as 10,000 psi

Pressure tests of pipe to 80 per cent of yield point, made with hydrostatic test equipment capable of developing pressures up to 10,000 psi, and automatically operated, are now offered by Spang-Chalfant Division of The National Supply Co., Ambridge, Pa.

When holding test pressure for the normal period of five seconds, tests may be run at the rate of 120 per hr. Different phases of the test follow successively after pressing a single button. Each operation can be activated by individual controls also.

The new test bench, designed to permit shortening of pipe during test without strain on seals and to avoid impact strains if a pipe should fail, measures 86'. Foundation for it and accessory equipment is 112' long 42' wide at one end, with water sumps 13½' deep. Height over enclosure is 11 feet.

Simulated service tests, made on a production scale at point of manufacture are reported faster and more economical than field testing methods. They also eliminate uncertainties of predicting pipe performance on the basis of visible surface conditions which may be observed either by microscope or electro-magnetic inspection equipment.

(Information supplied by The National Supply Co., Dept. CP, Ambridge, Pa.)

Do you need a recipe to protect aluminum from iron-pickup?

insulating powder yields slurry that can be applied by spray, dipper or brush

The uncertainty of current aluminum supply emphasizes the need to protect this vital metal from contamination in melting, alloying, and casting operations. Among slurry coatings commonly used to protect aluminum is an insulating powder known as R-20. It is an extremely fine powder obtained from the insoluble residue resulting from digestion of bauxite in the Bayer process of making aluminum.

Operators use various recipes for mixing coating slurries, but the following is suggested by Aluminum Ore Company, which manufactures Insulating Powder R-20. Mix two to four lb of R-20 with one gal of water and heat mixture to boiling point. Add ¼ to ½ pint of sodium silicate; stir the mixture and bring it to a boil again.

Resulting slurry can be applied to aluminum parts by spraying, dipping or brushing. Metal parts should be heated between 200 and 400° F. before slurry is applied. This makes coating dry faster and stick tightly to protected part.

If metal surface is smoothly machined or covered with film of oil or grease, it will probably be difficult to obtain adherent coating. Alcoa's plants generally sandblast or dustblast such surfaces to make sure they are slightly roughened and free from oil or grease. After sandblasting, the first coat of slurry is applied. If necessary, two or three additional coats can be built up by this method. Where thicker coating is required, layers can be applied by brush.

Coating may be applied to molds, ladles, melting pots,



Iron kettles used to melt aluminum are coated with Insulating Powder R-20

pouring troughs and other ferrous metal equipment which comes into contact with molten aluminum.

(Information received from Aluminum Company of America, Dept. CP, 801 Gulf Bldg., Pittsburgh 19, Pa.).

Resonating reeds control number of stations from one circuit . . .

each reed relay in circuit responds to a different narrow frequency band

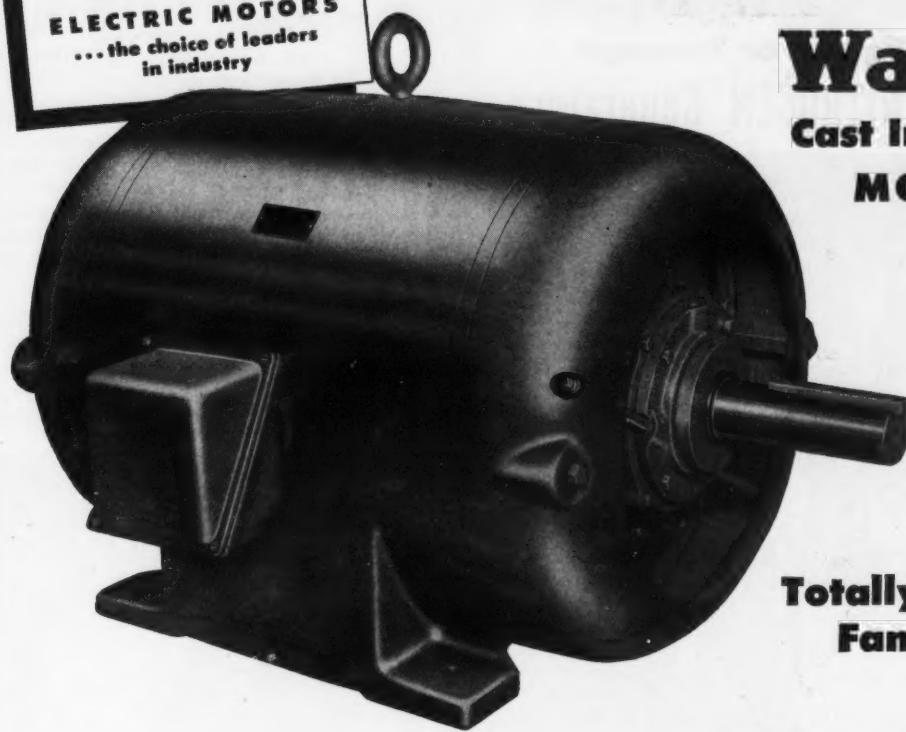
Here is another idea for driving several control stations from one circuit or one signal carrier. Frahm Resonant Reed Relays are electro-mechanical devices which can discriminate sharply between one frequency and another. Sensitive frequency bands are narrow enough to permit 16 relays to operate together in one circuit with a total frequency range of 200 to 500 cps.

In a typical application a control function is used to turn on or off a source of low frequency signal (50 to 500 cps). Signal is transmitted either on a wire line or as a modulated carrier to some remote location. Here it operates a reed relay to indicate control function.

Construction of the relay allows it to respond to a narrow band only. Coil sets a metal reed vibrating when signal approaches reed's resonant frequency. Contact of the relay is positioned so that it is made by the reed from 5 to 20% of the cycle. Where steady DC is needed as an output, the reed relay can be utilized to drive an auxiliary relay.

In complex systems, combination of relays can be used to obtain a maximum number of responses. By using "n" relays, number of control functions which can be handled is equal to the number of combinations of 16 relays taken "n" at a time.

(Developed by James G. Biddle Co., Dept. CP, 1316 Arch St., Philadelphia 7, Pa.)



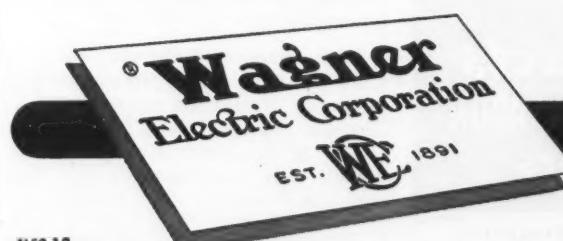
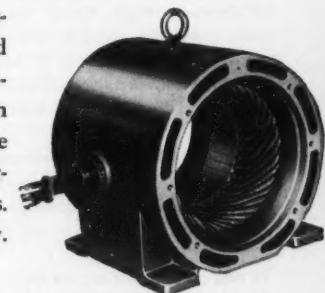
Wagner
Cast Iron Frame
MOTORS

**Totally-enclosed
Fan-cooled**

Built for use in corrosive atmospheres

Wagner Cast Iron Frame Motors are designed to provide the corrosion resistance demanded by applications in chemical plants or in other applications where protection against corrosion is required. They feature completely protected laminations . . . special varnish treated windings . . . a cast iron, gasket-sealed conduit box . . . a running shaft seal . . . and are totally-enclosed and fan-cooled for complete protection against acids and alkalies present in the atmosphere in the form of dust, fumes or moisture. The photo at right illustrates the rugged, one piece cast iron frame, showing openings for ventilation.

Where additional protection against explosive atmospheres is desired, an explosion-proof design (type JP) is available. Both the standard (type EP) and the explosion-proof types are built in ratings from 2 to 250 hp., with either normal or high torque characteristics. Non-ventilated 1 and 1½ hp. motors also available. Wagner Bulletin MU-132 gives complete information on these corrosion-resistant motors. Write for your copy today.



M52-18

ELECTRIC MOTORS • TRANSFORMERS • INDUSTRIAL BRAKES
AUTOMOTIVE BRAKE SYSTEMS • AIR AND HYDRAULIC

BRANCHES IN 32 PRINCIPAL CITIES

When inquiring check CP 3560 on handy form, pgs. 2-3



High Purity or Tonnage OXYGEN-NITROGEN Generators

▲ Typical Air Products High Purity Oxygen-Nitrogen Generator installation in customer's plant. Oxygen capacity 25,000,000 cubic feet per month. Produces Nitrogen simultaneously.

◀ Typical Air Products Tonnage Oxygen-Nitrogen Generator. Oxygen capacity 500 tons per day. Produces Nitrogen simultaneously.

Make your own oxygen and nitrogen from the free air

Air Products High Purity Generators make pure, dry oxygen, and/or nitrogen from air, compress it up to 170 atmospheres, feed it directly into your pipelines. Efficient, safe, simple, compact.

Operated by one man part-time. 14 models available with capacities from 300 cubic feet to 12,000 cubic feet per hour. Can also produce liquid oxygen and nitrogen.

Air Products Tonnage Generators produce huge quantities of very low cost oxygen and nitrogen in gaseous or liquid form. Capacities, purities and pressures

are virtually *unlimited*. Utilize the most advanced cycles, to suit individual requirements. Safe, simple — operated by one man per shift.

TO FIND OUT HOW you can use the free air to make your own oxygen and nitrogen, talk over your requirements with Air Products Engineers. They have designed, built and put into successful operation nearly 500 oxygen-nitrogen generators.

AIR PRODUCTS, INCORPORATED
Dept. K, Box 538,
Allentown, Pa.

Air Products
OXYGEN-NITROGEN-ARGON
Generators

Specialists in Equipment for All Low-Temperature Processes

When inquiring check CP 3561 on handy form, pgs. 2-3

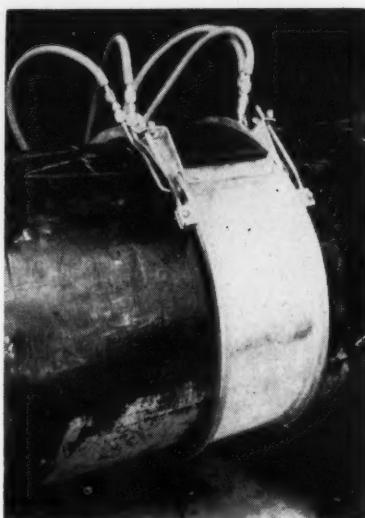
IDEAS

Hot welds can be X-rayed for quick detection of defects . . .

hot radiography successful in inspection at temps to 1200°F

Process of "hot radiography" permits the taking of X-ray photographs of large pipes, valves, and similar units at temperatures as high as 1200°F. It has been applied with success in inspection of partially-completed welds on hot sections of pipe to check for welding defects.

Because the process, known as the McElroy-McNutt method, can be accomplished at elevated temperatures, it eliminates several time-consuming steps formerly necessary for the usual



No need to wait for the weld to cool before X-ray inspection

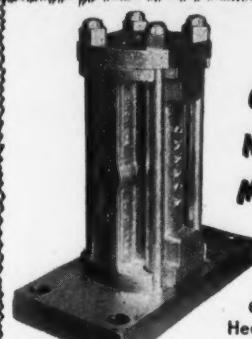
radiographic inspection technique which required cooling of the section to be inspected to about 100°F. With the new process it is now possible to interrupt the welding operation to inspect the weld root where most flaws occur.

Time is saved because, if defects are found, it is necessary to chip away only a partially-completed weld. Technique can be used for radiography of other forms of hot metallic materials.

As an example of the time saved by the hot radiography process, welding time on comparable sections of pipe at one plant was reduced from nine days to less than three days when work was inspected by the new process.

(Information supplied by Sam Tour & Co., Inc., Dept. CP, 44 Trinity Place, New York 6, N. Y.)

New CANNON "QUIET-TYPE" DOUBLES VIBRATOR LIFE



Greater Vibration
Noiseless Operation
Minimum Maintenance
Longer Life

Cannon 2" Style EM "Quiet-Type", Heavy Duty Vibrator with long stroke.

• Air-cushioned impact and heavier pistons with longer strokes give Cannon "Quiet-Type" Vibrators long-lived, economical vibration. There is no metal to metal pounding. Bolt and end plate breakage are eliminated.

In recent tests a Cannon "Quiet-Type" Vibrator operated continuously for 3600 hours with no decrease in efficiency . . . no indication of structural failure.

For better, more dependable pneumatic vibration, try Cannon Vibrators. Available in 1/4" to 4" piston sizes, they range in weight from 9 to 140 lbs. Satisfactory performance is guaranteed. Send for complete information today!

A-4501

CANNON

VIBRATOR COMPANY
1111 POWER AVE., CLEVELAND 14, OHIO

When inquiring check CP 3562 on handy form, pgs. 2-3

Nerco-Niro

Spray Dryers

For maximum solids recovery. Adaptable to a wide range of chemicals. Easy and economical to operate and maintain. Performance backed by years of spray dryer experience. Each industrial installation individually engineered. Laboratory facilities available for test purposes.

Illustrated: Portable
34" Nerco-Niro Spray
Dryer unit.



NICHOLS ENGINEERING & RESEARCH CORP.
NERCO-NIRO SPRAY DRYER DIVISION
70 Pine Street, New York 5, N. Y.
INDIANAPOLIS PASADENA MONTREAL

When inquiring check CP 3563 on handy form, pgs. 2-3

**Sun recovers fertilizer
formerly discarded in
nitrate waste . . .**

construct huge reservoirs into which solutions are poured for evaporation

The sun has been put to work in Chile to produce more than 100,000 tons of nitrate fertilizer per year from solutions which have been thrown away in the past.

Until recently no economical means was known to process these waste waters. Engineers developed a paving material from chemicals and stones available locally. With it large ponds with 7 ft high walls were constructed and filled with left-over nitrate solutions. The sun, which shines 360 days a year in Chile, evaporates the water, leaving behind the fertilizer.

Regular process for nitrate is to allow water to leach through natural ore. This solution is then cooled with refrigeration so that most of nitrate crystals precipitate and can be removed. Remaining in solution is a great deal of soluble nitrate and other chemicals.

The Chilean Nitrate Company has known for years of the value of chemicals discarded during manufacture.

However, they did not know how to recover them without spending more money than they were worth. Solar evaporation was considered. For this they needed something big enough to hold hundreds of tons of water. Cement is quite expensive and, in addition, local earth tremors caused it to crack.

Engineers hit upon idea of making their own paving mixture, a combination of stone, nitrate residue, lime, and salt brine. To make the huge reservoirs, they obtained a 28-ton automatic paver from the Worthington Corporation. This machine does the work of 30 smaller concrete mixers.

Fertilizers recovered from the ponds is more valuable for farming than regular material. This is because it contains a percentage of potash, which is better as fertilizer than pure nitrate. Four ponds have been built and work has started on six more. A second big paver has been delivered for the construction.

(Courtesy of Worthington Corporation, Dept. CP, Harrison, N. J.)

**Silicone finish stands up
under temperature
of 875°F . . .**

does not powder or lose color in service on inside and outside of central gas heater

Silicone-base heat-resistant finish has been found to withstand temperature of 870°F under regular service conditions. This temperature is generated by combustion chamber of central gas heater manufactured by John Zink Company of Tulsa. When used inside and outside of unit, paint does not blister, peel, or lose color or gloss. Finish is now being used on all of their hot applications.

Paint can be applied by brush, spray, or dip to any chemically clean metal surface. It either air dries or is adapted to conventional force drying systems. A number of colors are available for outer coverings. Aluminum is usually employed for combustion chambers.

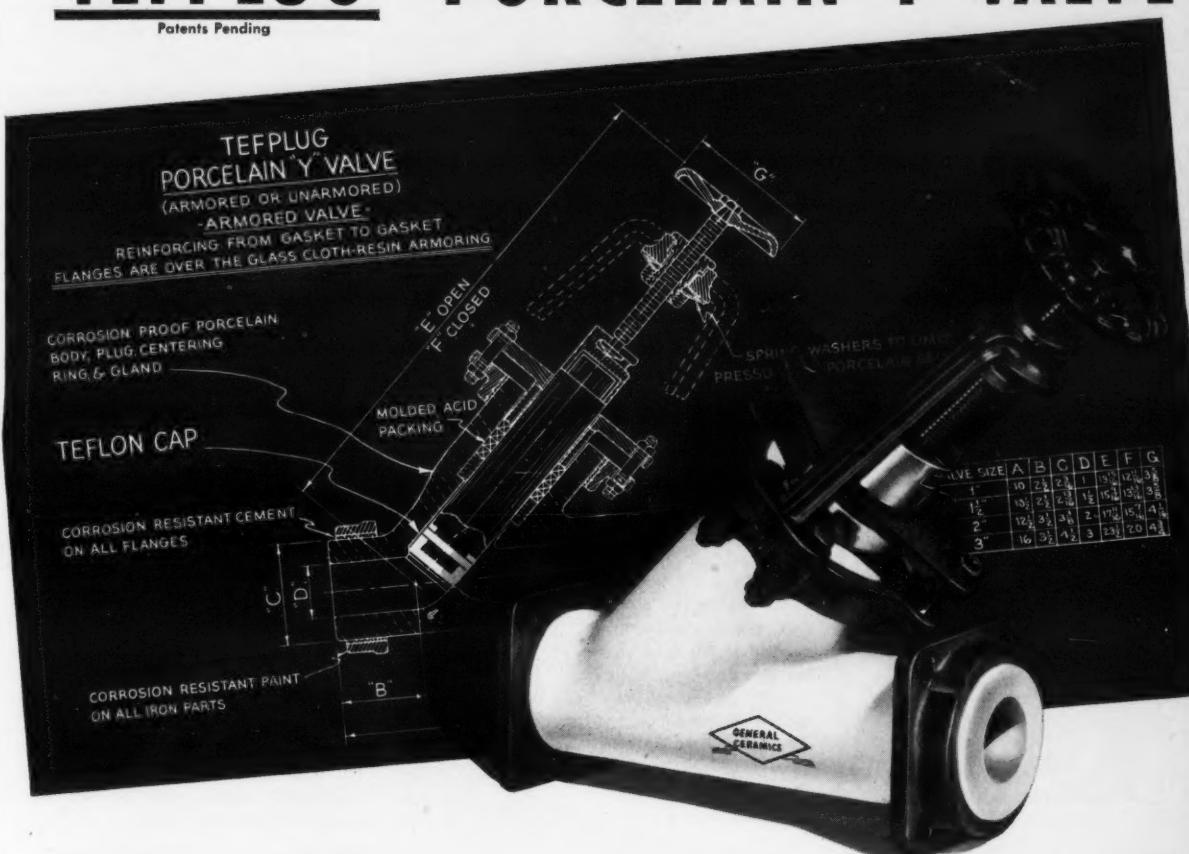
(Sicon finish is manufactured by Midland Industrial Finishes Co., Dept. CP, Waukegan, Ill. . . or for more information check CP 3564 on handy form, pages 2 & 3.)

ABSOLUTELY NEW!

Solve your 3 major valve problems . . .

"TEFPLUG" PORCELAIN Y VALVE

Patents Pending



LAPPING COMPLETELY ABOLISHED! No more fractured bodies from closing valves too tight! Quick, easy, fingertouch adjustment! You're assured these three big advantages with the radically new "Tefplug" Porcelain Y Valve. Special spring washers put a safe limit to pressure on the porcelain seat. The unique pliable "Tefplug," machined of Du Pont Teflon, further reduces strain and affords improved seating. This cushion action also makes it ideal for use with automatic or remote operating mechanisms.

The body of the new "Tefplug" Valve is made of our thermal shock resistant Pyrotherm porcelain

which has been thoroughly proved in years of service. The valve is now available in sizes from 1/2" to 6", both in Y and angle valve constructions . . . with or without our Polyiron armoring . . . and with the choice of standard blue asbestos, Teflon impregnated blue asbestos, or the new "Chemlon" Teflon ring packing.

Here's the most important advance in porcelain valve design that has been made in a score of years. Write today for the full story about the "Tefplug" valve, or call our nearest sales office General Ceramics & Steatite Corp., Chemical Equipment Division, Keasbey, New Jersey

SALES OFFICES

Atlanta, James G. Nichols Co., 84 Peachtree St. * Buffalo, R. E. Walther, 220 Delaware Ave. * Charlotte, N. C., Mec-Tric Control Co., P. O. Box 354 * Chicago, Universal Midwest, Inc., 2133-35 S. Kedzie Ave. * Cincinnati, General Ceramics & Steatite Corp., 307 E. 4th St. * Cleveland, F. L. Lefebvre & Co., 7010 Euclid Ave. * Houston, The Whelan Co., 2405 San Jacinto St. * Los Angeles, Jacobs Engineering Co., 417 So. Hill St. * Oakland, Jacobs Engineering Co., 600 Sixteenth St. * Portland, Ore., R. E. Chase & Co., 1220 S. W. Stark * Seattle, R. E. Chase & Co., 414 Times Sq. Bldg. * Spokane, R. E. Chase & Co., 501 Hyde Bldg. * Tacoma, R. E. Chase & Co., P. O. Box 1414 * In Canada: Montreal, Emmans, Ltd., 405 Canada Cement Bldg. * Toronto, Richardson Agencies Ltd., 454 King St., W.

GENERAL CERAMICS

AND

STEATITE CORPORATION

CHEMICAL EQUIPMENT

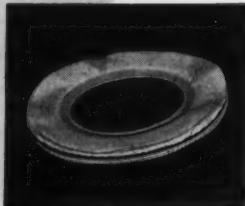
When inquiring check CP 3565 on handy form, pgs. 2-3

CHEMISEAL GASKETS

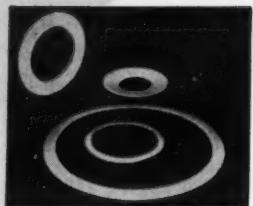
ARE IMPERVIOUS TO
ACIDS, CAUSTICS, SOLVENTS

MADE OF
TEFLON

*Teflon's inertness to all chemicals, excepting molten sodium and fluorine, has become so well known that Chemiseal Gaskets have become standard for corrosion and contamination problems throughout industry.



Chemiseal Teflon-jacketed gaskets are available in any size, with a variety of filler materials suitable for glass, glass-lined, porcelain-lined, Carbate, Haveg or metal piping and equipment. These fillers are protected on both faces and the inside diameter by the chemi-resistant Teflon jacket.



Solid Teflon cut gaskets are available either as ring or full face gaskets for all standard pipe sizes or for irregular shaped openings. Solid Teflon gaskets $\frac{1}{8}$ " thick generally can be used wherever a $\frac{1}{16}$ " compressed asbestos gasket would be mechanically suitable.

Sheet Teflon for cutting your own gaskets for field emergencies, is available in thicknesses from $\frac{1}{16}$ " and in standard sheet sizes up to 36" square. Write for catalog or send blue prints for special gasket requirements.

UNITED
STATES
GASKET
COMPANY

FLUOROCARBON
PRODUCTS DIVISION
FABRICATORS OF TEFLOM, KELF
AND OTHER FLUOROCARBON PLASTICS
CAMDEN 1, NEW JERSEY

*DuPont's trademark for its tetrafluoroethylene resin

When inquiring check CP 3566 on handy form, pgs. 2-3

IDEAS

Special machining grade of laminated plastic tube . . .

resists moisture, acids, alkalis; used to handle nylon and silk

A special moisture resistant machining grade of manufacturer's Textolite laminated plastics tubing has been developed for textile applications.

Another concern, Wood Plastics Company, Wayne, Pa., is manufacturing sizing cylinders from the material.

Cylinders measure 7" long, have an ID of $5\frac{1}{8}$ ", with a wall thickness of $\frac{1}{4}$ ". High acid and alkali resistance is reported. They are presently being used to handle nylon and silk. Exteriors of the sizing cylinders are sanded and buffed to produce an exceptionally smooth finish. Being concentric inside to outside, smooth performance is obtained with the cylinders.

(Textolite is manufactured by General Electric, Dept. CP, Pittsfield, Massachusetts.)

Vinyl-base cement can now be obtained in 3-oz tubes . . .

adhesive is widely used for cementing plastics

Vinyl-base cement, particularly satisfactory for plastics, is now available in 3-ounce tubes. Heretofore, it has only been furnished in gallon cans or drums. Adhesive has found extensive use in cementing of dissimilar plastics, plastics to non-plastics, and for styrofoam. Tube has long, narrow tip which allows easy application to small or depressed areas.

Cement is clear and non-staining. It contains 50% vinyl solids, has good mileage, and remains flexible. Solvents used are formulated not to affect a thin plastic.

(Rez-N-Glue is manufactured by Schwartz Chemical Co., Dept. CP, 326 West 70th St., New York 23, New York.)

Virtually waterproof, tape meets rigid Gov't specs . . .

vapor barrier gets approval after 10 yr task

An almost-perfect moisture vapor barrier has finally been developed in the line of industrial tapes after a ten-year period in which manufacturers attempted to develop a tape that would meet government specifications for Type I Grade A (under

A BETTER WAY TO CUT YOUR ROOF MAINTENANCE COSTS

This new time-proven AMERTEX overlay saves you:

High costs of new roofing
Extra labor expense
Constant patching
Preserves present roof
Future repair bills

AMERTEX is adapted to any smooth surfaced flat or sloping roof with not more than one-third pitch.

It is a semi-liquid mineral membranous resealer with a record of exceptional durability. It is simply and speedily laid.

No prior preparation of materials or heating required. Any man who can paint a porch floor can apply a durable AMERTEX overlay.

AMERTEX HAS "PULL"

(Approx. 100 lbs. per lin. foot)



Copyright 1952, A.O. & P. Co.

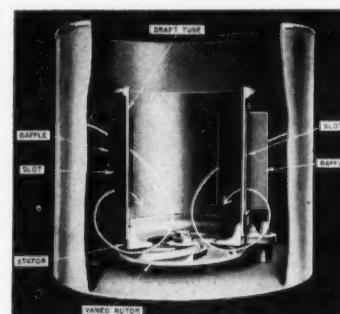
TRY AMERTEX this season on your most troublesome roof. You'll like it. Sample no-charge.



Responsible industrial salesmen—investigate if wanting to serve in substantial manner invaluable to your trade.

When inquiring check CP 3567 on handy form, pgs. 2-3

TAKE A Profitable Shortcut in All Fluid Mixing . . . and Many Paste Mixing and Blending Operations



As rotor turns at high speed, mix is forced through the narrow opening between rotor and stator. Lumps and globules are broken up and mix is subjected to very turbulent mixing action. Mix is thrown out and up from the slots in the draft tube and thence down through the rotor-stator again.

The Abbé Dispersoll Mixer disperses, mills and blends (as well as emulsifies) in ONE operation. Shown here is the standard unit for thin to heavy slurries. (For pastes, a cuffed rotor-stator mixing element is used, together with a double rotating paddle and scraper device.) When you need very fast mixing and blending, with thorough elimination of solid agglomerates and liquid globules, you cannot afford to overlook the unique and economical job done by the Dispersoll Mixer.

Catalog 68 tells the whole story in detail. Write for a copy.

ABBÉ ENGINEERING CO.

46 CHURCH STREET
NEW YORK 7, N. Y.

Makers of
ABBÉ ENGINEERING Ball, Pebble and Jar Mills

When inquiring check CP 3568 on handy form, pgs. 2-3

CHEMICAL PROCESSING

JAN-P-127) as originally specified. The new tape, Polyken #329, is reported to keep its qualities of "tack" — or the ability to adhere quickly to a surface, — adhesion, and tensile strength while remaining 100 per cent waterproof for all practical purposes. Is available in "O.D.", black, red, and other government color specifications.

(Information supplied by Bauer & Black Div. of The Kendall Co., Dept. CP, 222 W. Adams St., Chicago 6, Ill. . . or for more information check CP 3569 on handy form, pages 2 and 3.)

Up to 14 different views with distortion-free perspective graphs . . .

subject is depicted as actually seen by the eye

A distortion-free perspective graph, based on principles of visual perception, has been devised to permit scaling directly from an engineering drawing into an accurate perspective.

Each graph may be used at a top view or — by inverting it — as a bottom view, allowing a choice of fourteen different views. By their use, perspective projection becomes as simple and as rapid as isometric projection with the added advantage of depicting the subject to be drawn as the eye actually sees it.

Graphs are designed to represent an inversion of the six faces of a cube. Each of the six planes is a grid, graduated in true perspective foreshortening, from which dimensions may be plotted and projected.

The set includes seven basic graphs, each designed to view the perspective grids at a different angle, (30 x 30°, 15 x 45°, 45 x 15°, 5 x 55°, 55 x 5°, 7½ x 27½°, 27½ x 7½°).

Each graph is practical for distortion-free perspective drawings of a size from 8 x 10" up to its full dimensions of 30 x 60 inches.

(Information submitted by Tech-Art Graphs, Dept. CP, 315 S. 15th Street, Philadelphia 2, Pa.)

Processing and Engineering Data sheets on pages 156, 158, 160, & 162

For more information on products at right, specify CP 3570 . . . see information request blank between pages 2-3.

ALOYCO valves cut installation and maintenance costs

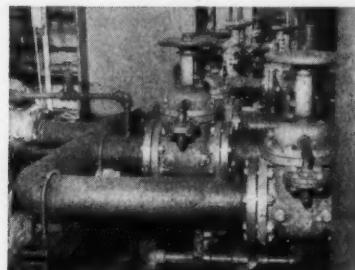
THE CORROSIVE: Ammonium nitrate solution.

THE APPLICATION: Manufacture of prilled ammonium nitrate fertilizer.

THE PLACE: Spencer Chemical Company, Pittsburg, Kansas.

THE VALVES: Sixty-four ALOYCO No. 1105 stainless steel steam jacketed gate valves.

THE RESULTS: Former valves were unsatisfactory due to hot spots caused by improper insulation and high maintenance costs. Replacement with ALOYCO valves has cut the cost of expensive fabrication of steam tracing which is not satisfactory for efficient operation. Performance of ALOYCO valves has been extremely good, with no evidence of freezing, corrosion or leaks.



ALOYCO jacketed gate valves were selected for this new process to meet both cost and performance requirements.

THE BACKGROUND: ALOYCO's entire manufacturing and engineering services are devoted to the production of corrosion-resistant alloys.

All our facilities are directed toward reducing valve costs, lengthening valve life in corrosive services. It is no wonder more ALOYCO corrosion-resistant valves are used than any other brand.

Whenever your manufacturing or processing problem can be solved by a corrosion-resistant valve, let our Aloyco Corrosion Clinic work with you.

ALLOY STEEL PRODUCTS CO., INC.
130 West Elizabeth Avenue, Linden, N. J.

Longer Lasting
ALOYCO VALVES
1st in Corrosive Service

**Lasts longer
in corrosive service**

ALOYCO sampling valves are functionally designed for convenience and dependability.

Like all ALOYCO valves, these specialized valves are the result of extensive metallurgical research and engineering and the production of high alloy valves exclusively.

ALOYCO No. 733 Sampling Valve has an ingenious expansion chamber which enables samples to be taken without splattering.





These two compressors, installed in a machinery penthouse on the 11th floor of the Pathé Television Center, New York, are now mounted on Korfund standard steel spring vibro-isolators. The structural steel saddles shown are not ordinarily required, but were used in this case so that original piping could remain unchanged.

...by controlling vibration

When originally installed, each of these two big compressors was mounted on 4 rubber-in-shear rails, which were not the proper isolation for the vibration frequency and floor conditions.

Consequently, vibration transmission through these "mountings" was so bad that it was impossible to use office space on the floor below, and vibration and noise transmitted through the building were picked up on film sound tracks several floors down.

Now, remounted on Engineered Korfund Spring Isolators, the job is entirely satisfactory and has been in operation for the last three years.

Korfund Engineered Vibration Control would have cost no more in the beginning.

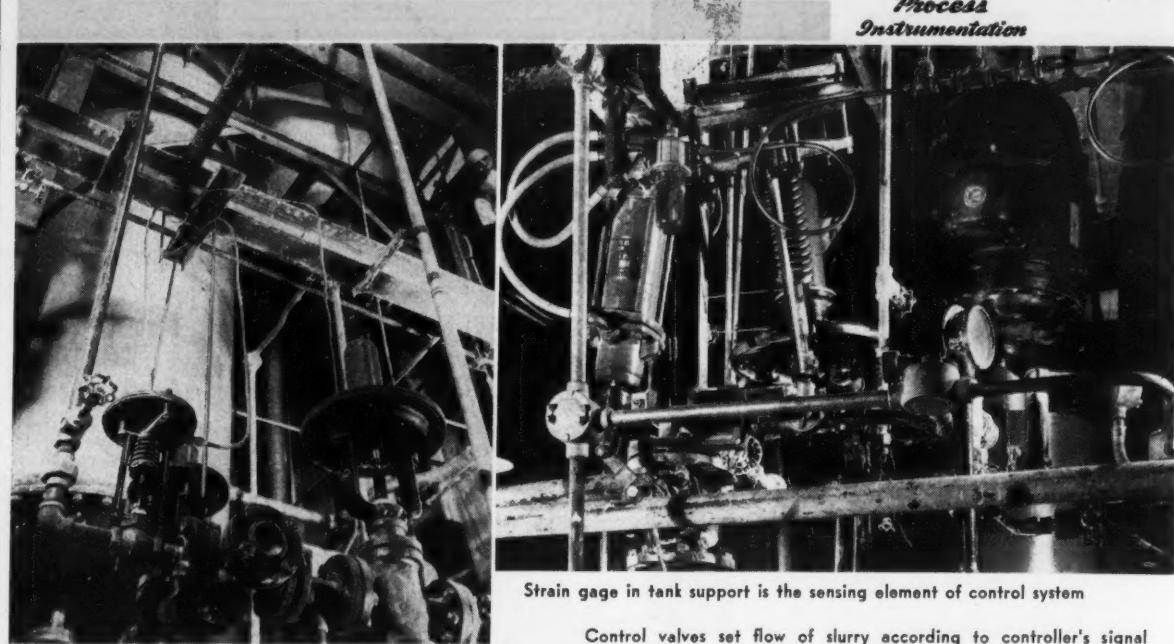
A selector chart in Bulletin G-104 gives basic isolation recommendations for both normal and critical operating conditions for pumps, fans, compressors, refrigerating and other types of mechanical equipment. See Sweet's Catalog Files, or write us for your free copy today.

We'll gladly submit recommendations without obligation. A half century of experience is at your disposal.



48-13E Thirty Second Place, Long Island City 1, N. Y.
In Canada: 510 Canal Bank, Ville St. Pierre, Montreal

When inquiring check CP 3571 on handy form, pgs. 2-3

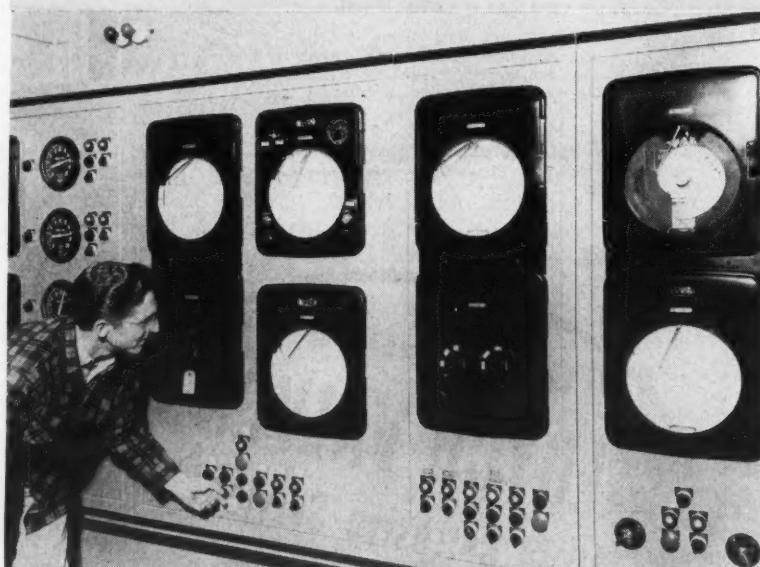


Strain gage in tank support is the sensing element of control system

Control valves set flow of slurry according to controller's signal

One Material Was Tough to Meter, The Other Was Dangerous — Strain Gages Handle Both

Strain-gage-actuated controllers determine flow on basis of amount needed minus amount delivered, avoiding viscosity corrections, fire, explosion hazards



Part of control room for the process



Part of remote control installation for acetaldehyde reactor

ACETALDEHYDE is one of the raw materials used in the production of pentaerythritol at the Hercules Powder plant, in Mansfield, Mass. With its low vapor pressure (boils at 21°C) and low flash point, it is a dangerous material to store and handle safely.

Because of this it was stored in pressure tanks at the far end of the plant area. Distance was adequate for safety, but it meant that before each reaction an operator had to go to the storage area, weigh acetaldehyde into smaller tanks, and return them to process. As the plant was enlarged and schedules were upped, lost time on the "acetaldehyde run"

mounted to a considerable figure. Since its accuracy was nothing to boast of, this method had only one virtue — its safety.

Another problem of handling at Hercules was the metering of a highly viscous lime slurry. Metering this material by any ordinary means just would not work because of wide changes in viscosity with temperature.

Common solution to both problems involved strain gages to weigh materials instead of meters to integrate flow rates. In the case of the lime slurry, instrumentation is carried one step further with a rate of flow control tied in. It works like this: Lime slurry in tank is weighed by a single strain-gage-actuated tension cell.

In starting process, operator sets index of a Weight CycleLog Controller to equal weight of tank and contents (slurry) before delivery to process is started. He sets a second index at the desired final weight. And finally, he sets a dial to control lime delivery in pounds of lime per minute.

When process is started, controller movement begins to drive control index of the instrument down scale at the delivery rate which has been set by operator. Output control air pressure from the instrument adjusts effluent valve from tank to maintain desired weight in the tank at any time. Thus an accurate measurement is made without recourse to any viscosity-temperature correction.

Acetaldehyde, under the new set-up, is also accurately and automatically controlled without any weak points which could lead to fire or explosion.

(Installation was jointly developed by Hercules Powder Company Engineers and The Foxboro Company, Dept. CP, Foxboro, Mass. . . . or for more information check CP 3572 on handy form, pages 2 and 3.)

Demodulator will operate in any existing potentiometer type recorder . . .

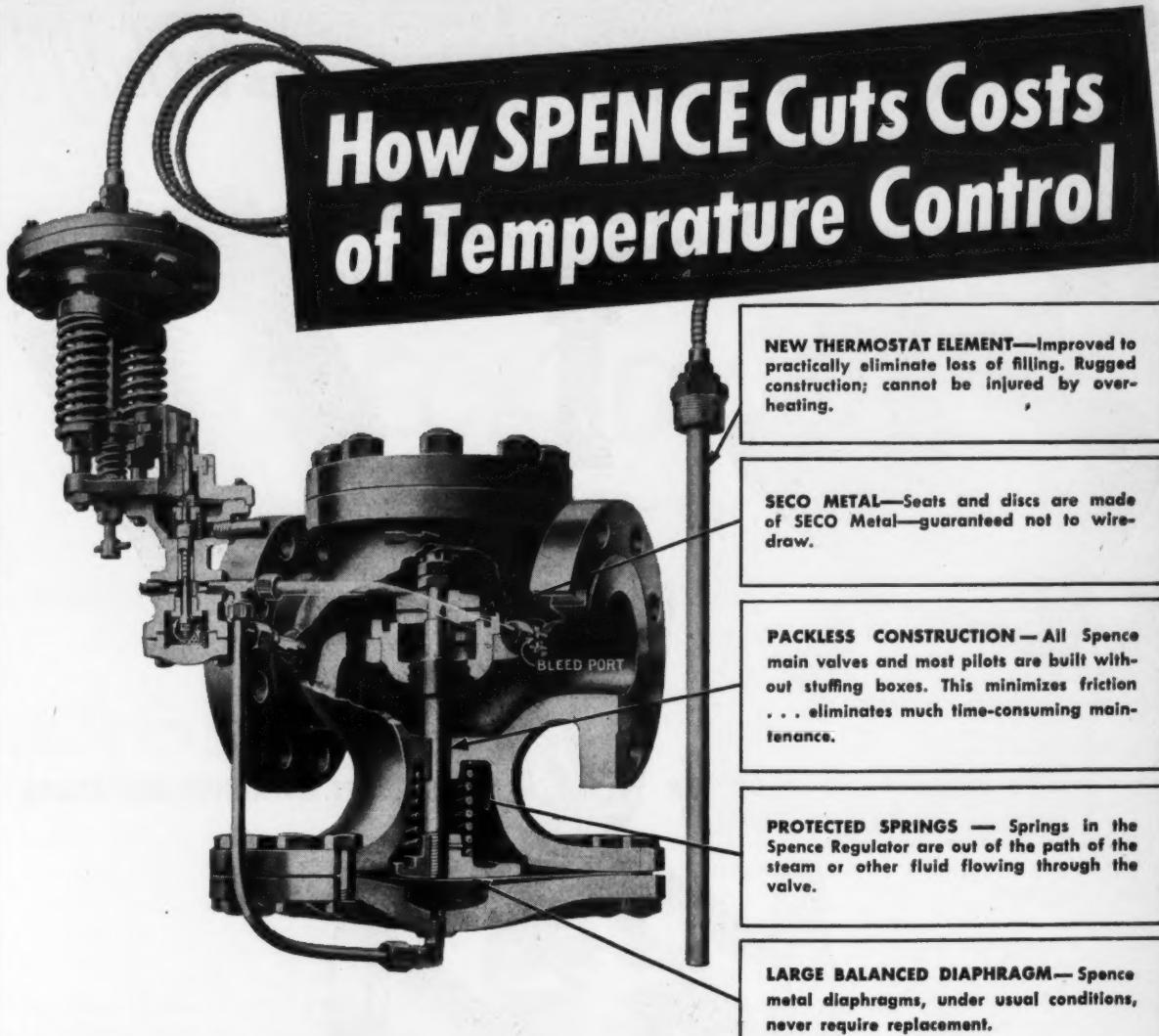
incorporates chopper circuit for changing AC input signal to DC output signal

Uses: Basic component for manufacturer's differential transformer instruments. It rectifies a signal corresponding to flow, temperature, pressure, etc., and can be used to drive recorders, controllers, or other instruments.



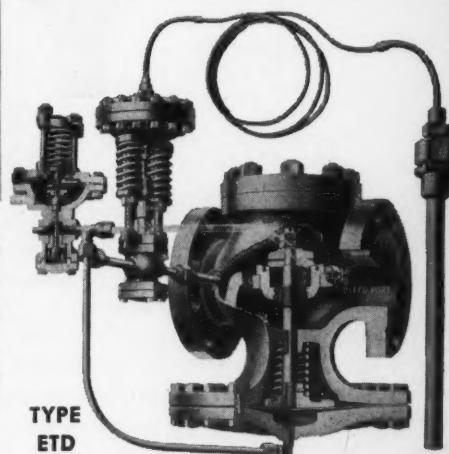
avoids complicated rectifying circuit and allows continuous, trouble-free operation. Instruments are compact and constructed for flush mounting.

(Product of Automatic Temperature Control Co., Inc., Dept. CP, 5200 Pulaski Ave., Philadelphia 44, Pa. . . . or for more information check CP 3573 on handy form, pages 2 and 3.)



Accurate Control for Both Storage and Instantaneous Heaters

Spence Temperature Regulators reduce the steam pressure and also accurately modulate the flow as required to control the temperature. No separate reducing valve is necessary • The Spence ET150 Regulator is recommended for heater pressures up to 50 psi. For higher pressures the Type ETD is available • For complete details on the entire Spence line of automatic regulating valves, strainers and desuperheaters, write for Bulletin 1200.



Spence

SPENCE ENGINEERING COMPANY, INC.
WALDEN, NEW YORK

When inquiring check CP 3574 on handy form, pgs. 2-3

YOU CAN CUT CONTROL VALVE INVENTORIES *in half!*



ONE ANNIN VALVE BODY FOR

THREE TYPES OF ANNIN OPERATORS



A single Annin valve body is standard for use with any of three types of Annin operators. Furthermore, each size of operator fits two sizes of valve bodies. Think how your inventory of critical control valves can be cut: For any installation the valve body is selected by size and alloy, then assembled with operator desired, and your

control valve is complete (positioner unit built-in)—ready for service under specified conditions. In addition, all valve bodies carry a 1000# rating. Interchangeable flanges series 15, 30 and 60 are split-ring mounted to meet any requirement. Write today for detailed information. Ask for Catalog 1500B.

When inquiring check CP 3575 on handy form, pgs. 2-3

PROCESS INSTRUMENTATION

Convert mechanical pyrometers to electronic operation in four hours . . .

mounting small unit in case permits change at 1/3 cost of electronic pyrometer

Uses: For conversion of mechanical recorders and other instruments to electronic operation.

Features: Mechanical pyrometer can be converted to give same performance as factory built instrument at 1/3 cost of new electronic pyrometer. Unit is small enough to be mounted inside case of most instruments. It can be installed in four hours by one unfamiliar with it.

Description: Kit for conversion of recorders consists of amplifier, servo motor, drive chain, gears, mounting brackets, cable, and instructions. Instruments that can be converted to electronic operation at present are all models of Leeds & Northrup manufacture and Foxboro strip chart recorders and controllers.

Conversion on Foxboro type controller is to electric eye operation. Small vane is attached to galvanometer pointer. This vane serves to interrupt a light beam going to photoelectric cell. Interruption of light beam provides on-off operation of control mechanism. If desired, customer may send instrument to manufacturer of kits for conversion and complete overhaul.

(Product of Pyrometer Service Co., Dept. CP, 348 River Road, North Arlington, N. J. . . or for more information check CP 3576 on handy form, pages 2-3.)

Determines moisture electronically without need for weighing or accurate measuring . . .

method is applicable to granular or powdered products; analyses can be made in one minute

Uses: Rapid determination of moisture content of almost any granular or powdered non-metallic material. Has been successfully used on wood waste, fish meal, starch, mild soaps, glue powder, drugs, chemicals, and many others.

Features: Analysis is fast — only one minute is required. Weighing or accurate measuring of sample is eliminated, since moisture determination is made on material which is compressed to a predetermined pressure in a hydraulic press.

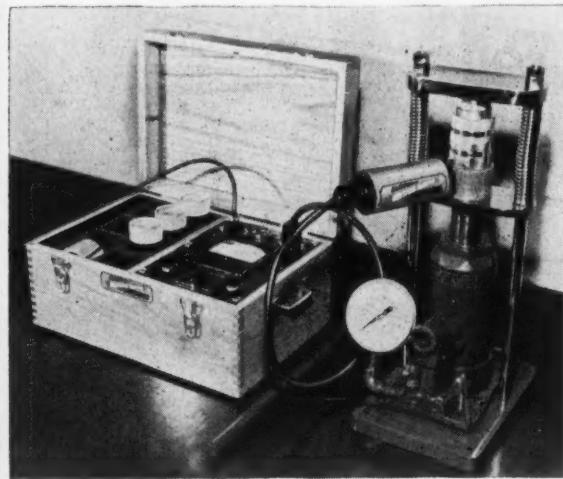
Description: Instrument consists of four separate units: the master measuring unit, the interchangeable box, the sampling unit consisting of electrode and sample cup, and finally, the hydraulic press with the pressure gage.

To make a moisture analysis of a material, a sample of it is placed in the sample cup, then compressed to a predetermined pressure in the hydraulic press as shown in the illustration. Moisture content is instantly read on a micro-ammeter as soon as the appropriate plug-in range box is inserted at the base of the measuring cup. Range boxes weigh but 8 ounces and contain all the electronic elements necessary to control the sensitivity range of the entire instrument. A hermetically sealed standard in each range box is used as a check against the instrument to assure positive results. When necessary the range boxes can be sent intact to the factory for quick, easy servicing.

More dial divisions for each per cent moisture are obtained by a "suppressed zero" technique, which

spreads the moisture range over the entire face of the micro-ammeter dial. Power consumption of the unit is only 10 watts, and can be supplied for operating from AC line or battery.

Complete instrument occupies a bench space only 11" deep and 24" in length, with an overall height of 18".



Made up of four separate units

It does not require the services or attendance of a skilled operator and is designed for use as a production line analytical tool.

(New model G5 Granular Moisture Testing Instrument is a product of Moisture Register Company, Dept. CP, 1510 W. 11 Chestnut St., Alhambra, Calif. . . or for more information check CP 3577 on handy form, pages 2 and 3.)

Blending, proportioning, extraction processes can be regulated accurately, uniformly . . .

simple setting of calibrated dial to desired gpm automatically assures set rate

Uses: For regulating rate of liquid flow in such jobs as blending and proportioning, solvent extraction, controlling filter effluent, water treatment and deionizing, chemical process control, evaporator influx, diluting of bulk heavy chemicals.

Features: Simple operation is main feature. Calibrated dial is set to the desired flow rate, and despite fluctuations of pressure in either inlet or outlet lines, flow to the set rate is automatically controlled. Regulator action is quick and positive, without hunting and time lags usually associated with more elaborate systems. Installation requires no special tools.

Description: Available with standard capacities ranging from 0.1 to 100 gpm of water, regulators are accurate to within ± 3 percent. All parts are built for heavy duty, are precision machined, made in wide range of suitable alloys. Packing is Teflon. Connections may be threaded or flanged.

For fast and easy disassembly of the unit, the design is such that by removing bonnet screws and bonnet, entire mechanism is available for servicing.

(Development of the W. A. Kates Co., Dept. CP, 430 Waukegan Rd., Deerfield, Ill. . . or for more information check CP 3578 on handy form, pages 2 and 3.)



Instrument Makers CHECKED ✓ and chose the **BRISTOL DYNAMASTER** Continuous-balancing electronic recorder

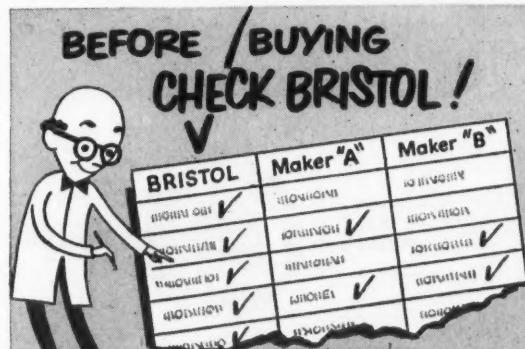
The instrument makers whose advertisements appear above know that their reputations depend upon the accuracy and reliability of their recorders. They select each component part with scrupulous care.

As the recording unit in their instruments, they all selected Bristol's Dynamaster. When you choose the Dynamaster for your own measuring needs you are assured of the same accurate, precise instrumentation demanded by these instrument makers.

BRISTOL

The dependable Guidepost of Industry

AUTOMATIC CONTROLLING, RECORDING AND TELEMETERING INSTRUMENTS



THE BRISTOL COMPANY
141 Bristol Road
Waterbury 20, Conn.

Please send catalog giving details of
Dynamaster performance to:

NAME _____ TITLE _____

COMPANY _____

ADDRESS _____

CITY _____ ZONE _____ STATE _____



When inquiring check CP 3579 on handy form, pgs. 2-3

**Heavy-duty tachometer heads
suited for measuring
lower speeds . . .**

or can withstand overspeeding of 2 to 10 times rated values without damage

Uses: For measuring speeds as low as a fraction of a rpm or speeds up to 199 rpm. When used with manufacturer's tachometer indicators, recorders or controls, device is well suited for measuring speeds of extruders, welders, kilns, conveyor belts, ovens, dryers, and similar installations where ruggedness is required for low speed measurement.

Features: Speeds as low as a fraction of a rpm can be measured or up to 199 rpm for full scale indication.

Overspeeding of 2 to 10 times rated values results in no damage whatsoever, manufacturer reports. Built-in gearing permits direct engagement of very low speeds without need of speed changing drives.

Description: Stainless steel head shaft of tachometer heads (Series 57M) is $\frac{3}{4}$ " diam and supported in large, sealed ball bearings. Head casting is anodized aluminum having

$\frac{3}{8}$ " wall and heavy mounting feet to insure stability of initial alignment. Built-in gears are designed for long life, minimum wear, high tooth strength, and quiet running.

All working parts and terminals are completely enclosed against dirt, abrasives, splashing liquids. Electrical connections between the head and speed indicator can be 1000' or more and provisions are made for employing conduit or armored cable. Connections to the head can be made from any one of four approaches and the head can be mounted in any position.

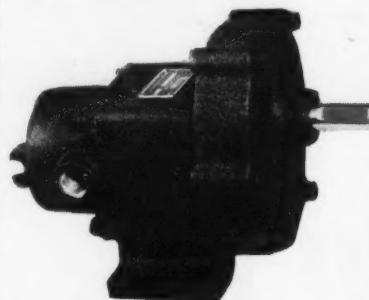
Stable performance is assured over a wide range of temperature, humidity, vibration or magnetic fields. Permanent lubrication for an extreme temperature range is employed throughout. All heads of the same type number are completely interchangeable, require no special matchings.

(Development of the Metron Instrument Co., Dept. CP, 432 Lincoln St., Denver 9, Colo. . . or for more information check CP 3580 on handy form, pages 2 and 3.)

**Describes analyzer for high temp
fractional distillation**

Four-page data sheet reports operational features of semi-automatic analyzer designed to handle high temperature fractional distillations. Instrument is intended for precise distillation of mixtures in boiling range from -50 to 350°C. Apparatus used for analyses requiring pressures from atmospheric to 5 mm of mercury, absolute. Analyzer incorporates multi-range potentiometer for accurate and sensitive recording of reflux temperatures. Data sheet presents schematic view of analyzer as well as typical distillation curves.

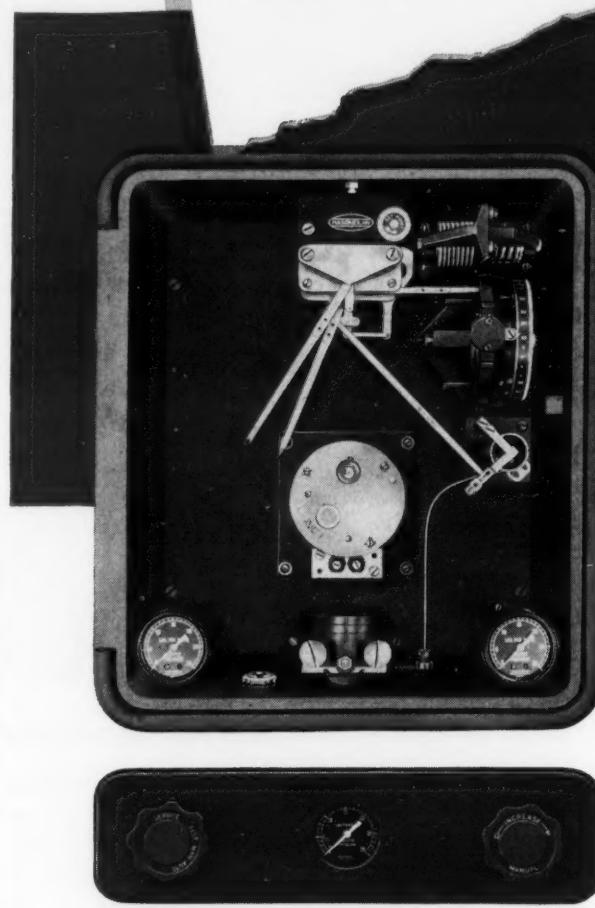
Unit handles volumes from 25 to 12,000 ml thru use of interchangeable columns and kettles. Columns with as



Has rugged construction for measuring very low speeds

So You Want to Buy a

Of course you'll compare the
various models offered. You
will note that: —



All have the same basic components . . .

primary element, proportioning mechanism, pilot.

All operate on same basic principle . . .

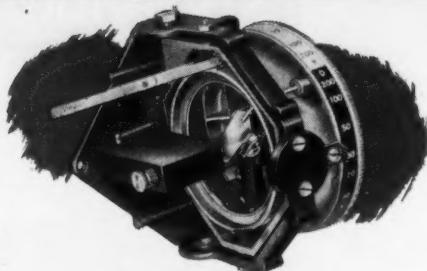
measure changes in controlled variable, apply corrective measures by regulating an output pressure.

BUT HERE THE DIFFERENCES BEGIN

differences that are important to the instrument man and operator: differences in design and arrangement which result in great variations in simplicity, versatility, reliability and ease of adjustment and servicing.

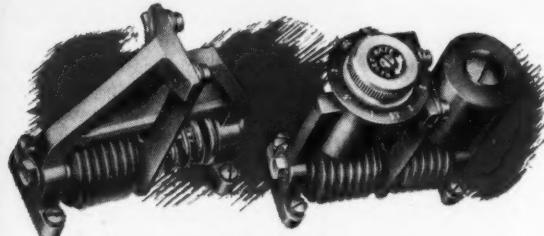
For example, note how refinements in design make the Masoneilan 60000 Series Controller outstandingly different from most other types —

Pneumatic Controller!



THE GIMBAL UNIT...

the heart of the mechanism which regulates the flow of power from the controller — selects four combinations of primary and feedback motion to provide proportional, differential-gap and on-off control with direct or reverse action — makes this controller more versatile than any other. The proportional band wheel, by one simple adjustment, selects the type of control, the action and the proportional band or differential-gap setting.



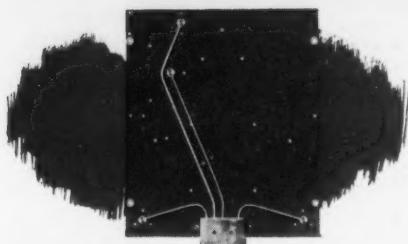
INDIVIDUAL, INTERCHANGEABLE SUBASSEMBLIES...

without linkage complexities, provide for (a) addition of standard subassemblies easily, to obtain pneumatic set, time schedule, differential control; (b) easy interchange of standard proportional and proportional-rest units; (c) ease of servicing because each sub-assembly is individually accessible.

EASE OF ADJUSTMENT...

provided by accessibility without removing chart; by large knobs and large diameter proportional band wheel; by easily read graduated scales.

With accurate, stable performance plus unmatched simplicity, versatility and reliability — the Mason-Neilan 60000 Series Controller is truly the Instrument Man's Instrument for pressure, temperature, liquid level or flow control.



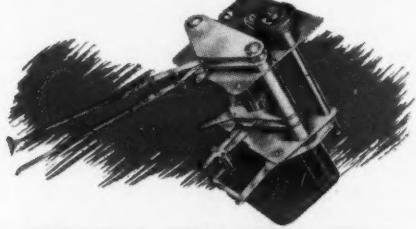
MANIFOLDING OF ALL AIR PASSAGES

with plug-in connections (a) aids accessibility, (b) eliminates pressure fittings, (c) permits interchange of components or addition of manual control sub-panel without piping changes.



BALANCED, AMPLIFYING PILOT...

insures maximum capacity and stability in flow of output pressure. Includes latest refinements such as plunger-cleaned sapphire restriction, filters in outlet and inlet ports, frictionless floating valve action. Easily removed for servicing.



MULTIPLE PEN MOVEMENT...

provides common axis of rotation for pens and index, ball pivots, index setting by manual or automatic (e.g., Pneumatic Set, Time Schedule, etc.) adjustment.

PROCESS INSTRUMENTATION

many as 300 theoretical plates and those with flood points as high as 4000 cc per hr can be supplied. Distillation column is made of Pyrex glass with packing of corrosion-resistant metal. Construction features multiple metal reflectors suspended within vacuum jacket. Result is reduction in heat leakage to negligible degree for operating temperatures to 350°C above room temperature. Compensating heaters are thus eliminated.

Data sheet is concluded with procedure for typical analytical distillation. Data sheet 10.16-14 is issued by Minneapolis-Honeywell Regulator Company, Dept. CP, Wayne and Windrim Aves., Philadelphia 44, Pa. When inquiring specify CP 3582 on handy form, pages 2 and 3.

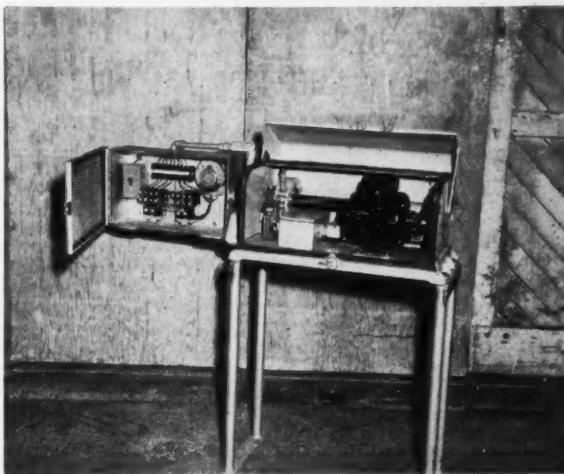
Junior version of sampler line lends itself to installations of limited headroom . . .

12" short-stroke model is stated to sell for 1/3 less than similar types

Uses: Sampling wet, dry, solid or liquid materials in conjunction with any type of continuous material handling equipment, such as belts, flumes, pipes, chutes, screens, etc.

Features: Compact design allows installation under conditions of limited headroom. Stated cost is 1/3 less than similar samplers.

Description: Galigher Junior model has a cutter stroke of up to 12". Principle of sampling action involves cutting of a stream of material at right angles



Smaller version of automatic sampler line has 12" cutter stroke

at a designated uniform rate of speed and obtaining equal percentages of the material from all parts of the stream.

Interval between cuts is constant and by means of timer control, cuts can be made as frequently as necessary. Control box for unit may be positioned remotely.

This smaller version of larger models in sampler line is supplied as a package unit — complete with all electrical equipment. Three types of cutters are available, depending on material being sampled. Dimensions of sampler are as follows: height, 8 1/2"; width, 23 3/4"; and depth, 12 1/4".

(Manufactured by The Galigher Co., Dept. CP, 545 W. Eighth St., Salt Lake City 4, Utah . . . or for more information check CP 3583 on handy form, pages 2 & 3.)

MASON-NEILAN REGULATOR CO.

1203 ADAMS STREET,



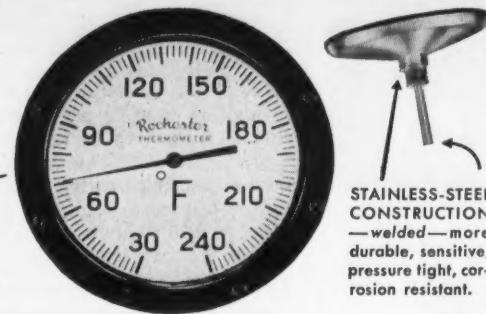
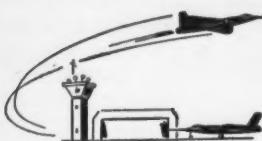
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When inquiring check CP 3581 on handy form, pgs. 2-3

*Smooth
action...*



STAINLESS-STEEL
CONSTRUCTION
—welded—more
durable, sensitive,
pressure tight, cor-
rosion resistant.

Rochester DIAL THERMOMETERS

react instantly to temperature changes!

• The superior dampening in ROCHESTER Dial Thermometers will never "set-up" or "freeze" the pointer in one position. It assures fast, smooth action at all times. New bimetallic elements never "tire" or lose their accuracy . . . take violent temperature change without error in indication.

Made of corrosion resistant stain-

less steel . . . backed by 35 years of instrument-making experience . . . ROCHESTER Dial Thermometers are ideal for heavy-duty service. *And they're made to meet U. S. Air Force specifications.*

Order them today from your Rochester Representative or write for further details. Rochester Manufacturing Co., Inc., 86 Rockwood St., Rochester 10, N. Y.

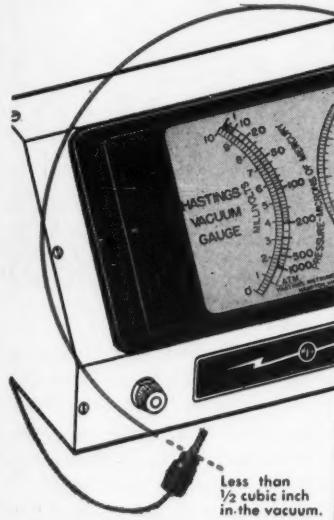
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DIAL THERMOMETERS

Manufacturing Company, Inc.
86 Rockwood St., Rochester 10, N. Y.

GAUGES AMMETERS

When inquiring check CP 3584 on handy form, pgs. 2-3

Contamination, Corrosion and Outgassing Free! VACUUM MEASUREMENT IN THE MICRON RANGE



The Hastings Vacuum Gauge gives continuous direct readings in microns of mercury—without range switching or calibration factors. Only one control knob is needed for initial setting. After that, the calibration holds indefinitely, regardless of pressure changes.

The stability and wide range of this gauge (1 to 1000 microns) makes it extremely suitable for both laboratory and production use in vacuum tube manufacture, distillation, automatic exhaust machines, dehydration and refrigerator servicing. Its rapid response to pressure changes makes it especially suitable for leak detection, warning devices and pressure operated controls.

Hastings' exclusive noble metal thermocouple design gives accuracy, long life and a low operating temperature. This construction prevents fluctuations due to ambient temperature changes and reduces the time constant to less than 1/2 second.

Write today for free literature and prices. Other Hastings ultra sensitive precision instruments include electronic flowmeters, manometers, air velocity meters and electronic standard cells.

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HAMPTON, 31, VIRGINIA

DESIGNERS AND BUILDERS OF RAYDIST AND SPECIAL
ELECTRONIC, ELECTRICAL, AND MECHANICAL INSTRUMENTS

When inquiring check CP 3585 on handy form, pgs. 2-3

PROCESS INSTRUMENTATION

Bellows seal of packless valve provides leakproof control of critical fluids . . .

in operation, bellows expands and contracts with throttling or on-off action of the valve

Uses: For chemical processes where line-fluid leaks are dangerous. Valve is reported to furnish durable, effective sealing for a process operating under vacuum. Fluids sealed by valve include toxic synthesis gas, corrosive chlorine, explosive toulene, and valuable pharmaceutical chemicals.

Features: Bellows seal is reported to provide positive, leakproof packing glands for difficult control applications.

Description: Bellows is made of type 347 stainless. It is welded to a sleeve which is closely fitted on valve stem, and housed in adaptor spool, inserted between bonnet and valve body. Top of bellows is seam-welded to a flange which is tightly clamped between bonnet and adaptor spool flanges. Compression seal between sleeve and valve stem is accomplished by locknut and ferrule at top of sleeve. In operation, bellows expands and contracts with throttling or on-off action of the valve.

Bellows sealing is available in all Stabiflo valves up to four inches and in needle valves up to one inch nominal size. Sealing assembly can be readily removed when converting valve to conventional application. Extra leak protection is provided by an auxiliary packing gland above the bellows.

(Product of The Foxboro Company, Dept. CP, 26 Neponset Ave., Foxboro, Mass. . . or for more information check CP 3586 on handy form, pages 2 & 3.)

Low air pressure? Valve operates on as low as 12-35 psi on diaphragm . . .

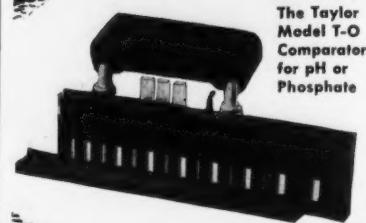
simplicity, balance, precision are all features of sturdy-constructed control device

Uses: For use when only low pressure air is available for the pilot control.

Features: Valves can be operated with instrument air at pressures of from 12 to 35 psi on the diaphragm. Other features are sturdy construction, simplicity in design, carefully balanced parts. Valves can be completely disassembled and reassembled in a few minutes without disturbing the main piping.

Description: With valve housing of aluminum, Quick-As-Wink diaphragm-operated, spring return, single plunger valve has hollow, stainless steel plunger with precision placed radial ports. Spring return is placed under the diaphragm push plate permitting open

GUARANTEED COLOR STANDARDS



The Taylor Model T-O Comparator for pH or Phosphate

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Assure Continuing Accuracy at Economical Cost

Every liquid color standard supplied with Taylor Comparators carries an unlimited guarantee against fading, thus you are assured of continuing accuracy in making determinations.

Taylor Comparators are easy to use since there are no fragile, single standards to handle. Each Color Standard Slide houses a complete range of standards for any single determination. Slides and bases are made from rugged, durable plastic. Each complete set includes base, slide, reagents and accessories. Carrying cases are also available.

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When inquiring check CP 3587
on handy form, pgs. 2-3

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LOW COST LIGHTING
for Gages, Rotameters, etc.

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JERGUSON
Explosion-Proof
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YOU get even, no glare, Low Cost Lighting with Jerguson Gage Illuminators . . . the improved illuminators that are unexcelled for gages, rotameters, etc. They give you ideal illumination with safety . . . and make possible faster, easier, accurate reading.

Jerguson Illuminators use the principle of solid wedge lighting to give you clear, even lighting, without bright spots. Light flows through the plastic wedge and is reflected evenly. A single small bulb gives you better illumination at a cost so low that savings quickly pay for the illuminator.

Jerguson Illuminators are approved by Underwriters' Laboratories and are built in accordance with their Standard for Electric Lighting Fixtures for use in hazardous locations for Class 1, Group D Services. Made in a variety of sizes; also available in a non-explosion proof model.

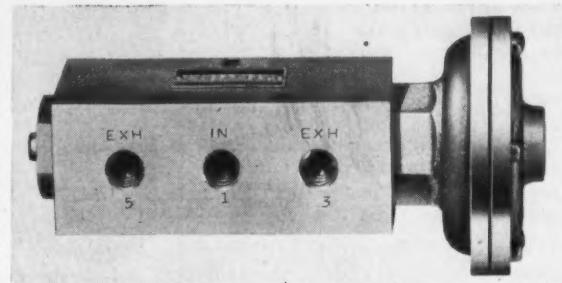
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Jerguson Tress Gage & Valve Co. Ltd., London, Eng.

When inquiring check CP 3588
on handy form, pgs. 2-3

PROCESS INSTRUMENTATION



Operates on 12-35 psi air

end exhaust if desired. Valves are furnished tapped for either $\frac{1}{8}$ or $\frac{1}{4}$ pipe connection, in 2, 3, double 2-way, 4 and 5-way designs for use with air, oil or water at line pressures up to 125 psi, also vacuum, at normal temperatures (not exceeding 150°F).

(Development of C. B. Hunt & Son, Inc., Dept. CP, Salem, Ohio . . . or for more information check CP 3589 on handy form, pages 2 and 3.)

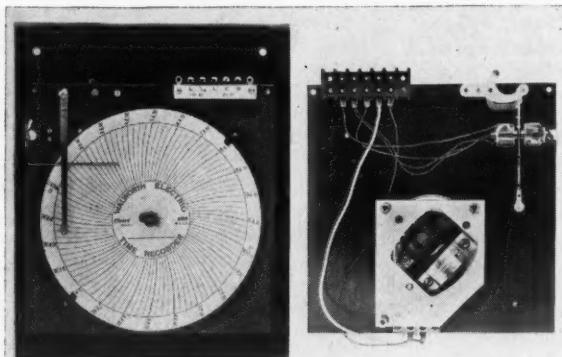
**Did it move, stop, start, reverse?
Recorder tells all as well
as duration . . .**

synchronous motor drives 8" charts for 8 to 24 hours, or for a week-long period

Uses: For recording movements of shop machinery or equipment operations such as dyeing, drying, dipping, washing processes.

Features: When connected to the start and stop buttons of machine or to the forward and reverse motor starter coils, recorder gives written record of all stops, starts, and reversals which occurred, as well as the time duration of each.

Description: Synchronous motor of the "Multicorder" drives the 8" chart which is available for 8 or 24 hr, or seven days; speed of the motor is adapted to type of chart required. Motors are available in 110/60 and



Gives record of stops, starts, reversals, and time durations

220v AC, 60 cps. Pen is actuated from the center by a left and a right solenoid for forward or reverse operation for any function that can be separated into three positions. Solenoid pen coils are available from 6 to 220v AC, 60 cps.

(Product of Walworth Controls Co., Dept. CP, 131 Main St., Rocky Hill, Conn. . . or for more information check CP 3590 on handy form, pages 2 and 3.)



Thermometers

in all forms—ranges—stem lengths—connections

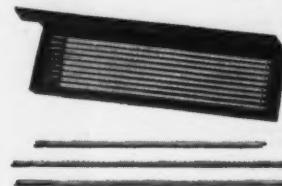
Whether your requirement calls for certified laboratory thermometers . . . or rugged all-metal industrial types . . . or thermometers for remote reading . . . you'll find exactly what you require in the Weston-TAG line—the most comprehensive line of quality thermometers ever offered by ONE manufacturer. Literature on request. WESTON Electrical Instrument Corporation, 617 Frelinghuysen Avenue, Newark 5, New Jersey.

Laboratory



ALL-METAL

—have readable, dial-type scales and corrosion-resisting stainless steel stems—stem lengths from 2" to 24"—ranges from low as -100°F. to high as 1000°F.—accuracy $\frac{1}{2}$ of 1% of thermometer range.



GLASS

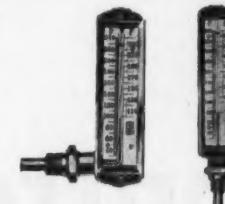
—certified sets of ASTM Testing thermometers with overlapping ranges in protective case. Ranges from -36°F. to high as 760°F. Also precision and standard etched stem thermometers for general testing.

Industrial



ALL-METAL

—provide unmatched readability and durability—accuracy within 1% of thermometer range. Available in all types, ranges and stem lengths (2½" to 72") for all requirements.



GLASS (Metal Case)

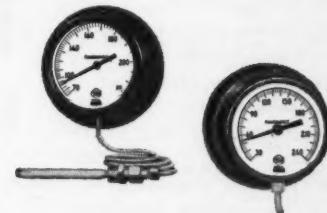
—available in all forms, all ranges, stem lengths and connections. Accuracy within one scale division. Also submarine types, metal and cupcase thermometers.

Remote Reading



ELECTRICAL

—resistor bulb sensing element permits mounting indicator any distance away from point of measurement. Multiple remote readings also possible by use of selector switch and several bulbs.



PRESSURE ACTUATED

—for remote reading, in 5, 6 and 8" dial sizes. Ranges from low as -325°F. to high as 1000°F. Accuracy one scale division unaffected by vibration or severe shock. Cases of iron, brass, or plastic.

WESTON

Temperature Instruments

—TO INDICATE — RECORD — CONTROL

When inquiring check CP 3591 on handy form, pgs. 2-3

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McConnell Sales & Engineering Co.
2809 Central Avenue
Mail Address: P. O. Box 145
Homewood Branch

CALIFORNIA, Los Angeles 65
Bernard S. Hunday
3532 Fletcher Drive
Mail Address: P. O. Box 3916
Glaszel Station

CALIFORNIA, San Francisco 7
Campbell & George Company
379 Brannan Street

COLORADO, Denver 16
Peterson Company
4949 Colorado Boulevard

CONNECTICUT, Hartford 3
Gibson Engineering Company
c/o Ernie Besselman
119 Ann Street

FLORIDA, Jacksonville 2
Ward Engineering Company
903 West Adams Street

FLORIDA, Orlando
Ward Engineering Company
1217 West Central Avenue

GEORGIA, Atlanta
Thomas B. Combs Company
198 Decatur Street

ILLINOIS, Chicago 6
Kulben Engineering Company
Room 502, 600 W. Jackson Blvd.

MARYLAND, Baltimore 2
Harry M. Wood
124 Light Street

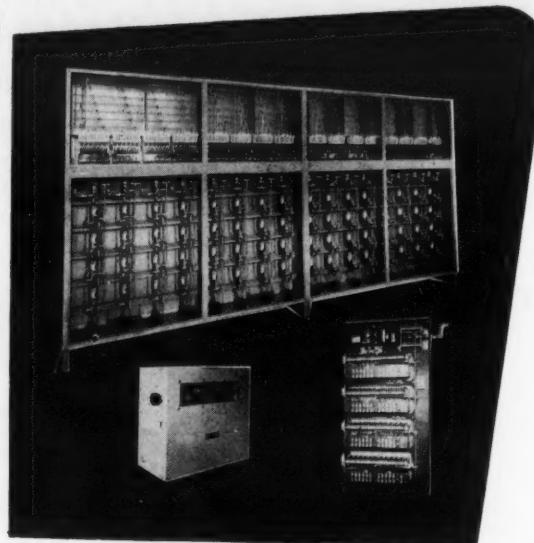
MASSACHUSETTS, Boston 15
Gibson Engineering Company
1018 Commonwealth Avenue

MICHIGAN, Detroit 26
Ralph D. Ernest
405 Penobscot Bldg.

MINNESOTA, St. Paul
R. A. Lundbeck
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6964 Thomas Boulevard

PENNSYLVANIA, Upper Darby
W. F. Keegan Company
771 Shelleburne Road

TEXAS, Dallas 1
Lynn Elliott Company
Room 521
Second Unit, Santa Fe Bldg.

TEXAS, Houston 2
Lynn Elliott Company
371 M & M Building

UTAH, Salt Lake City 7
Sherman C. Naham Company
4777 South 13th East

WASHINGTON, Seattle 3
Instrument Sales Company, Inc.
2137 Second Avenue

CANADA, Toronto 16
Davis Automatic Controls, Ltd.
4251 Dundas Street West

CANADA, Montreal, Quebec
Davis Automatic Controls, Ltd.
Coronation Building, Suite 205
1405 Bishop Street

(EXPORT) NEW YORK, New York 16
Rocke International Corporation
13 East 40th Street

PROCESS INSTRUMENTATION

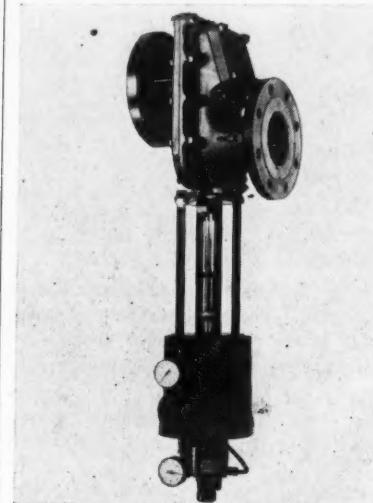
Flow rates as low as 30 gph don't plug this valve . . .

controlled flow ratio of 13:1
achieved with pulps and slurries

Uses: Flow rates of pulp, paper stock, and similar slurries can be controlled by this low-pressure pneumatic valve.

Features: Design of valve provides close control and the possibility of low flow rates without vulnerability to plugging.

Description: Rotogate pneumatic control valve attains a maximum-to-minimum controlled flow ratio of 13:1. In order to do this without



Window permits inspection

plugging with slurry at low flow rates (lowest: thirty gallons per hour) diamond-shaped ports are used. These are formed by the matching of V-notches on the discharge port and inverted V-notches on the sliding gate.

Valve is entirely self-cleaning, being swept clean by the agitating action of flow passing through the body.

There are no pockets where dead stock can collect. Sight glass window permits inspection of the discharge port and the sliding gate. Gate itself has no top, bottom, or side guiding surfaces to create excessive friction.

Pneumatic cylinders and positioners provide force considerable above that needed for operation. Positioner is an integral part of the operator in smaller valves, externally mounted on larger sizes. Tapped openings are provided so that water purge lines can be used to flush inner valve during shutdown, if desired.

Standard construction is 304 stainless with polished 316 stainless stems and

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it's fast

. . . you get instant, precise readings directly from scale face . . . no need for reference charts or calculations. Measure air flow through ducts, grilles, motors, spray booths, etc., or in the open.

it's accurate

. . . brings laboratory standards of air velocity measurement to the production line, mine, mill . . . anywhere. Needs no special care or handling . . . anyone can use it and get accurate results.

it's portable

. . . completely self-contained, hand-held. Rugged construction and sturdy case protect the Volumeter from usual hazards of portable use. Available in scale ranges to 24,000 f.p.m. Wide selection of jets and fittings assures adaptability of Alnor Volumeter to your application. Get full details and prices, write for Bulletin 2448-G. Illinois Testing Laboratories, Inc., Rm. 504, 420 N. La Salle St., Chicago 10, Ill.

Alnor

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When inquiring check CP 3593 on handy form, pgs. 2-3

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USE RANAREX

Whenever the specific gravity of a gas is a guide to a chemical reaction or process, Ranarex can be used to indicate, record or control it. Find out now how this accurate, low-cost instrument can help you!

Write to The Permutit Company, Dept. CP-7, 330 West 42nd St., New York 36, N.Y.



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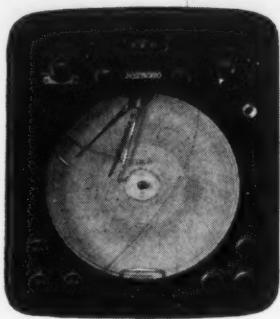
When inquiring check CP 3594 on handy form, pgs. 2-3

CHEMICAL PROCESSING

When inquiring check CP 3592 on handy form, pgs. 2-3

LOOK!

A Temperature Schedule Controller WITHOUT CAMS



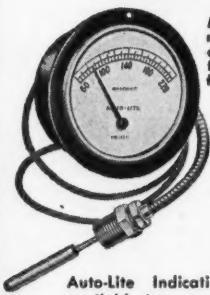
the Foxboro CycleLog Controller! Using no cams, it features simple knob setting of control schedules: (1) heats up batch to a preset starting temperature; (2) increases temperature at a controlled rate to the preset holding temperature; (3) maintains holding temperature for a preset period; (4) controls process shut down at end of cycle. Colored lights indicate each step. The CycleLog Controller is easy to install, easy to adjust, extremely accurate and flexible. Write for Bulletin 438. The Foxboro Co., 817 Neponset Ave., Foxboro, Mass., U. S. A.

FOXBORO
Rev. U. S. Pat. Off.

TEMPERATURE
CONTROLLERS

When inquiring check CP 3595 on handy form, pgs. 2-3

Depend on
AUTO-LITE
FOR TEMPERATURE INDICATION



Model G Thermometer (one-to-one ratio, liquid filled type) Priced from \$18.



Model V Thermometer (vapor pressure type) Priced from \$10.25.

Auto-Lite Indicating Thermometers are available in many types and sizes, with a choice of temperature ranges and mountings to meet your needs. Send for catalog.

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NEW YORK CHICAGO SARNIA, ONTARIO

AUTO-LITE
INDICATING & RECORDING THERMOMETERS

When inquiring check CP 3596 on handy form, pgs. 2-3

PROCESS INSTRUMENTATION

sliding gates. Connections are 150 lb standard flanges.

(Designed and built by Fischer & Porter Co., Dept. CP, 6110 County Line Rd., Hatboro, Pa. . . or for more information check CP 3597 on handy form, pages 2 and 3.)

Eliminate counterweight in gage for reading liquid level . . .

adaptable to low pressure tanks up to 70' in height

Uses: For automatic readings of liquid level in low pressure storage tanks.

Features: Neg'ator motor housed with gage head maintains a predetermined constant tape tension. This



Tank dial reads to inches and fractions of tank's content

eliminates need for conventional counterweight. Adaptable to all arrangements and types of low pressure tanks up to 70' in height, device is sensitive, yet is sturdy constructed.

Description: Tank gage incorporates full-view, direct reading counter in look box for quick, accurate reading of foot increments. Dial is intended for reading inches and fraction of tank's content.

Gas tight look box may be installed on existing float operated automatic tank gages utilizing 1/2" wide tape sheaves. Installation may be made on top of tank or at any desired height from the ground.

(Product of The Vapor Recovery Systems Co., Dept. CP, Compton, Calif. . . or for more information check CP 3598 on handy form, pages 2 and 3.)

INFRARED PROVIDES ACCURATE AUTOMATIC END POINT ANALYSIS for

ACETYLENE

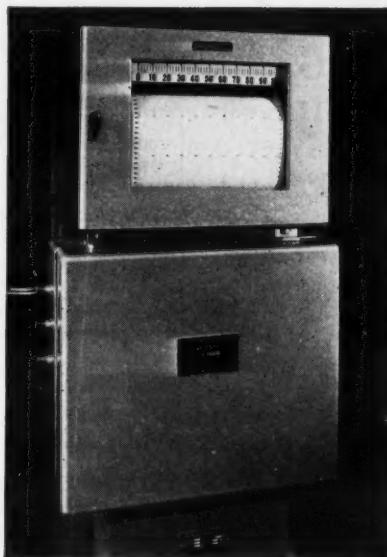
Acrylonitrile
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ETHYLENE

Ethylene Glycol
Ethylene Oxide
Ethanol
Ethylene Dichloride

with the

PROCESS CONTROLS PLANT STREAM ANALYZER



- The decisive factor in the economic success of a process is product quality and yield.
- End-point analysis for concentration variations is a reliable index of product quality and yield.
- Through end-point control, the results of such analyses can be used to provide automatic and continuous correction of the process variables.

- For these reasons, end-point analysis and its control application have become of major significance to the process engineer.
- The PROCESS CONTROLS Plant Stream Analyzer is specifically engineered for end-point analysis and control applications.

WRITE TODAY FOR BULLETIN 36

PROCESS CONTROLS

a division of Baird Associates, Inc.

33 UNIVERSITY ROAD

CAMBRIDGE 38, MASSACHUSETTS

When inquiring check CP 3599 on handy form, pgs. 2-3



PUT THIS 52-PAGE CATALOG TO WORK FOR YOU

Shows how to cut costs with unique thermostat . . . gives detailed explanation of installations . . . pictures wide variety of applications . . . a fact-filled guide.

Send today for your copy of this 52-page catalog on Fenwal THERMOSWITCH thermostats.

Learn how you, too, can cut costs in controlling humidity, radiant heat, pressure, vapor level, or other variables dependent on temperature.

Catalog gives complete explanation of the unique operating principle of Fenwal controls. Includes schematic diagrams — detailed breakdown of specific features — instructions on checking system under operating conditions — an entire section on selection and application of THERMOSWITCH controls.

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You will find the Fenwal Catalog #400 a gold mine of helpful information. For your free copy, simply write Fenwal, Incorporated, 247 Pleasant Street, Ashland, Massachusetts.

Fenwal

THERMOSWITCH®

Electric Temperature Control and Detection Devices
SENSITIVE...but only to heat

When inquiring check CP 3600 on handy form, pgs. 2-3

PROCESS INSTRUMENTATION

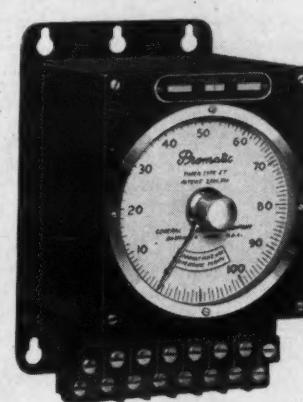
**Has large dial, can split a minute
for close timing purposes
to 60 millisecs . . .**

plug-in condensers facilitate steps within the overall timing range

Uses: For controlling timed operations between 60 sec and 60 milliseconds in automatic process control, on machine tools and molding machines, and laboratory life tests.

Features: Steps within the overall timing range are adequately covered by plug-in condensers. Time period is set automatically by means of the indicator and the large $\frac{3}{8}$ " dial.

Description: In the Promatic electronic timer, the discharge of a resistor-capacitor network through a sensitive gas tetrode relay tube provides the basis for each timing period, duration of which may be manually set by a potentiometer. Timing commences upon closure of any external switch; control contacts either open or close at end of timing, depending upon actual circuit requirements. Control contacts are double-pole, double-throw, rated at 10 amp, 125 v AC, non-inductive. Operation is from 115 v AC, or 220 v, AC, 60 cps. Timers may be mounted back-of-panel, against a wall, or



Large indicator makes setting of timer easy

in the rear of a cabinet. Wide-spaced barrier strips may be located either on the front or back of timers.

(Development of General Control Co., Dept. CP, Boston 34, Mass. . . or for more information check CP 3601 on handy form, pages 2 and 3.)

**Stability, accuracy are combined
in device for measuring
200-10,000 rpm . . .**

lubrication is permanent for extreme temperature range of tachometer head series

Uses: For measuring speeds between 200 and 10,000 rpm in cement kilns, rubber extruders, ball mills, metal working machines, and similar installations.

Features: Permanent lubrication for an extreme temperature range is employed throughout the series. Rugged, heavy-duty, stable performance is assured over a wide range of temperature, humidity, vibration, or magnetic fields. Manufacturer reports they can be overspeded two to 10 times without damage.

Description: Stainless steel head shaft is $\frac{3}{4}$ " diam and is supported in large, sealed ball bearings. Head casting is anodized aluminum having $\frac{3}{8}$ " wall and heavy mounting feet for stability. All working parts and terminals are enclosed against dirt, abrasives, and splashing liquids. Electrical connections between the head and speed indicator can be up to 1000' or more;

**All
New**

TAYLOR 6" DIAL

shows temperature, pressure or load at a glance !

For Temperature, mercury, gas, organic liquid (Monolex) or vapor actuated systems to fit nearly every type of application.

For Pressure, range spans from 12 psi to 20,000 psi are available using Bourdon springs or C springs of appropriate metals for required service.

For Load, standard tension and compression load elements are incorporated to use a new mercury Bourdon spring.

New movement design eliminates linkage errors, means more dependable accuracy throughout the range span.

Fume and moisture proof case may be face or flush mounted, panel or field.

6" Dial with bold numerals and graduations is easy to read.

Electric alarm mechanisms, easily and quickly adjusted, available optionally.

Ask your Taylor Field Engineer, or write for Bulletin 98214. Taylor Instrument Companies, Rochester, N. Y., and Toronto, Canada.

TAYLOR INSTRUMENTS MEAN ACCURACY FIRST

When inquiring check CP 3602 on handy form, pgs. 2-3

BUILDERS

BUILDERS-PROVIDENCE

**NEED
RECORDING, INDICATING,
CONTROLLING
INSTRUMENTS ?**

For full information on
BUILDERS EQUIPMENT for
metering and controlling
flow of liquids, steam, or dry
materials, write Builders-
Providence, Inc. (Division of
Builders Iron Foundry), 458
Harris Ave., Providence 1,
Rhode Island.

BUILDERS-PROVIDENCE

When inquiring check CP 3603 on handy form, pgs. 2-3

PROCESS INSTRUMENTATION

provisions are made for employing conduit or armored cable. Connections to the head can be made from any of four approaches; head can be mounted in any position. (Development of Metron Instrument Co., Dept CP, 432 Lincoln St., Denver 9, Colo. . . . or for more information check CP 3604 on handy form, pages 2 and 3.)

No amplifier required when using versatile bridge balance in direct recording . . .

simplicity in controls combines with accuracy to make system easy for less-experienced personnel

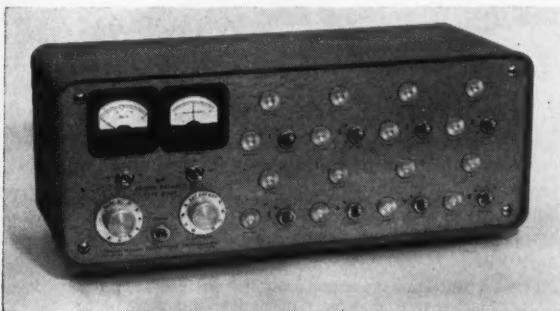
Uses: For direct recording of the output of a wide variety of strain gages and strain-gage type pickups without use of amplifier.

Features: Highly flexible, instrument combines extreme simplicity and a high degree of accuracy. As many as eight 120 to 350 ohm strain-gage bridges or strain-gage-type pickups, comprising four active arms, may be connected to the instrument. Voltage across each bridge can be adjusted individually and continuously from level of supply voltage to minimize drift.

Description: Type 8-108 eight-channel bridge balance, with individual and continuous supply voltage control across each bridge, handles 28.5 v DC maximum, down to a minimum of 2.0 v on a 350-ohm, four-arm bridge and 1.1 v on a 120-ohm, four-arm bridge. Each channel is provided with its own front-panel voltage control, and the channel switch connects any desired channel to the voltmeter circuit.

The same 30 v, full-scale voltmeter is connected to the supply voltage through the channel selector switch. Provision is also made to monitor and record the supply voltage by means of a 7-238 galvanometer. A locking potentiometer on rear panel allows adjustment of galvanometer deflection from 1.0 to 2.1" for any supply voltage from 22.0 to 28.5 v. A connector is provided for the monitoring galvanometer.

The 8-108 is designed for use with manufacturer's models 7-215, 7-218, and 7-238 galvanometers, but additional types may be used by providing proper damping resistance. Any of four fixed calibration resistors



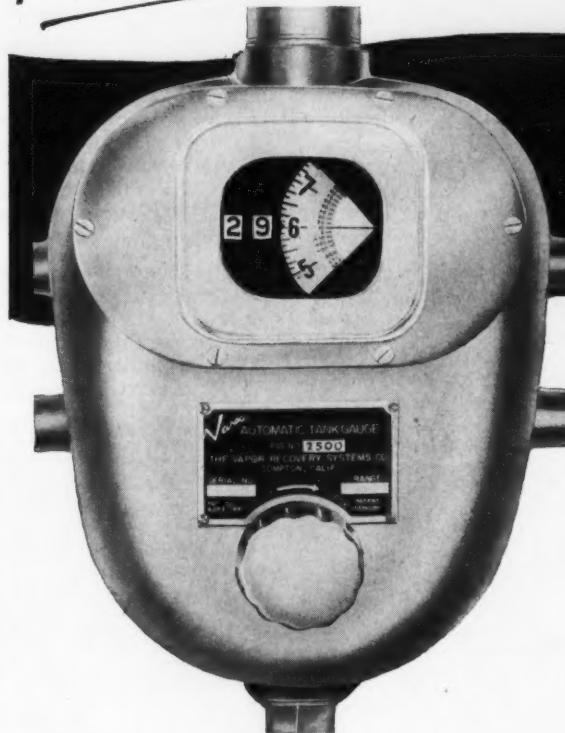
Simplifies direct recording

in a convenient 2:1 successive relationship may be applied to either half of each four-arm pickup bridge, each step doubling galvanometer deflection. In addition, a fifth position of the calibrate switch connects an external calibrate resistor of any desired value.

(Development of Consolidated Engineering Corp., Dept. CP, 300 N. Sierra Madre Villa, Pasadena 8, Calif. . . . or for more information check CP 3605 on handy form, pages 2 and 3.)

A New Achievement

.... in simplified, automatic Tank Gauging



"Varec"

FIGURE NO. 2500
AUTOMATIC
TANK GAUGE

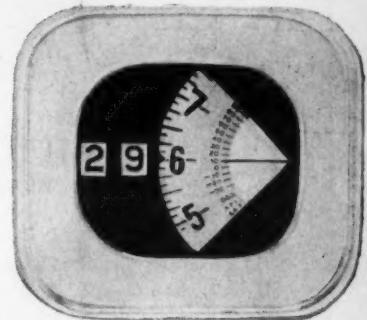
FOR ALL TYPES OF LOW PRESSURE TANKS
READINGS UP TO 70 FT.

"VAREC", a pioneer in the development and manufacture of automatic tank gauging equipment has applied new fundamentals of design and operation to the Figure No. 2500 Gauge for the ultimate in accurate liquid level reading and dependable, trouble free operation.

Representing a major improvement with this new concept of simplified automatic tank gauge design, the "VAREC" Figure No. 2500 now utilizes the revolutionary Neg'ator Motor (Pat. No. 2,063,799) housed within the gauge head, to maintain a predetermined constant tape tension. This eliminates the need for a conventional counterweight.

Here's a
Look Box
You Can Read
Easily,
Accurately!

(Shown approximately $\frac{1}{2}$ actual size)



EASIEST TO INSTALL because:

Both counterweight and counterweight pipe have been eliminated. This permits installation of the look box at any desired height from the ground or on top of tank.

EASIEST TO READ because:

Full view Counter in the Look Box for quick, accurate reading of foot increments and a dial for reading inches and fractions. Use of large distinct numerals minimizes chance of reading errors. Eliminates calibrated tape.

EASIEST TO OPERATE because:

"VAREC" patented Gravity Compensator (Pat. No. 1879805) is incorporated with "inch reading" dial. An external Gauge Check device (Pat. No. 2555593) permits manual checking of gauge operation when desired.

EASIEST TO MAINTAIN because:

All internal parts of the Figure No. 2500 Look Box are non-sparking in contact with each other. Non-corrosive Graphitar tape sheave bearings — self lubricating.



THE VAPOR RECOVERY SYSTEMS COMPANY

2820 N. Alameda Street, P. O. Box 231
Compton, California, U.S.A.

The "VAREC" Figure No. 2500 Automatic Tank Gauge is gas tight. It is adaptable to all types, arrangements and installations of low pressure tanks up to 70 feet in height. "VAREC" Figure No. 2500 Gauge Head is available as a separate unit and can be installed on existing float operated type tank gauges utilizing $\frac{1}{2}$ wide tape sheaves.

Provision has been made on the Look Box housing for installation at any later date of a "VAREC" Electronic Remote Reading Gauger Transmitter for use in conjunction with the various models of "VAREC" Electronic Gauger Receivers.

If you are not yet realizing the many time and money saving features and advantages of automatic tank gauging in your operations, install this new, simplified "VAREC" Figure No. 2500 Automatic Tank Gauge and start out ahead. Write or call your nearest "VAREC" Representative for all the facts.

MAIL COUPON NOW FOR NEW BULLETIN CP-3500

THE VAPOR RECOVERY SYSTEMS COMPANY
2820 N. Alameda Street, P.O. Box 231
Compton, California, U.S.A.

Dept. _____
Name _____ Title _____
Street and No. _____
City and State _____

CP.

wheelco  **Instrumentality**

VERSATILE
variety of control

SIMPLE
interchangeable
assemblies

ACCURATE
1/4 of 1% of full scale

ECONOMICAL
low original cost

capacilog recorder

Capacilog Strip Chart Recorders operate with the Wheelco "Electronic Link" to provide a permanent record of temperature or other variables in chemical processing. All standard control combinations including pneumatic and electrical proportioning types are available.

For complete information on custom recording at "mass production" prices, ask for CAPACILOG BULLETIN C2. Wheelco Instruments Division, BARBER-COLMAN COMPANY, ROCKFORD, ILLINOIS.

wheelco  **electronic controls**

Manufacturers of Capacitrol electronic controllers;
Flame-otrol combustion safeguards

When inquiring check CP 3607 on handy form, pgs. 2-3

PROCESS INSTRUMENTATION

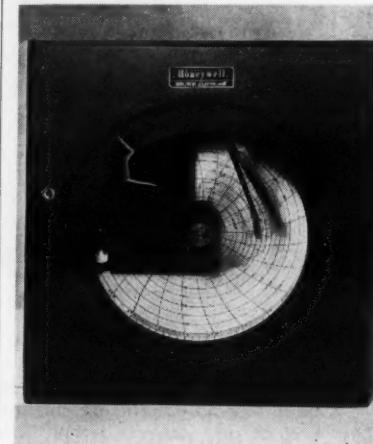
Clear graduated cam
permits fast reading
of program . . .

program controller-recorder can be electric or pneumatic

Uses: Time-temperature program control and round chart recording.

Features: Both cam and chart record are fully visible at all times. Record can be seen through clear plastic cam, or the cam can be swung out of the instrument case at any time without interfering with instrument action. Graduations on cam show what the program calls for.

Description: Programming mechanism of this electronic circular chart consists basically of the rotating plastic cam, a cam follower which changes the set point index, and micro switches to start or stop mo-



Records on a standard 12-inch chart

tors, sound alarms, etc. Graduated cam is shaped to the exact program desired and it may be driven by a separate motor and gear train to fit special rotational speeds. Clutch mechanism permits the cam to be positioned to the desired starting point.

This recorder-controller uses standard 12-inch charts and is available both in electric and pneumatic models.

(Product of Brown Instrument Div., Minneapolis-Honeywell Regulator Co., Dept. CP, Wayne & Windrim Aves., Philadelphia 44, Pa. . . or for more information check CP 3608 on handy form, pages 2 and 3.)

Readers of **CHEMICAL PROCESSING** are invited to submit concise briefs of their processing problems. With your permission these will be published (anonymously, if desired). We will place you in contact with any of the 33,000 people receiving CP who offer a solution.

Get Laboratory Accuracy

in Formulas . . . at the

Production Level!

with

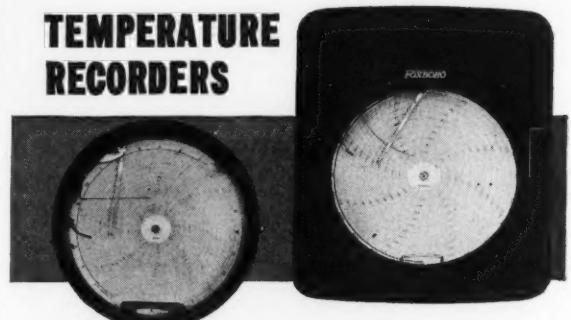
ROCKWELL
Industrial
METERS

The liquid content in the formula so carefully developed in your laboratory can be exactly controlled in production when Rockwell meters are assigned to the job. You'll get the highest measurement accuracy while saving materials, labor and money. In addition your accountants will gainfully use the records Rockwell meters provide for inventory and cost control. Write for full details.

ROCKWELL MANUFACTURING COMPANY
Dept. A-4 400 N. Lexington Ave., Pittsburgh 8, Pa.

When inquiring check CP 3609 on handy form, pgs. 2-3

TEMPERATURE RECORDERS



to avoid lost profits

Accurate **Foxboro Temperature Recorders** give you a minute-by-minute report of process conditions — an invaluable aid in determining future operation. Moreover, the records forecast impending difficulties — permitting corrections to be made before costly trouble starts.

Available with vapor pressure, gas pressure, or liquid expansion type systems. Choice of 50 standard bulbs; 700 chart ranges and scales from -450° to $+1000^{\circ}$ F. Round or rectangular cases for all operating conditions. Exclusive Foxboro design and construction advantages detailed in Bulletin 447. (Temperature indicators and controllers also available.) Write The Foxboro Company, 817 Norfolk St., Foxboro, Mass.

FOXBORO

**TEMPERATURE
RECORDERS**

When inquiring check CP 3610 on handy form, pgs. 2-3

CHEMICAL PROCESSING

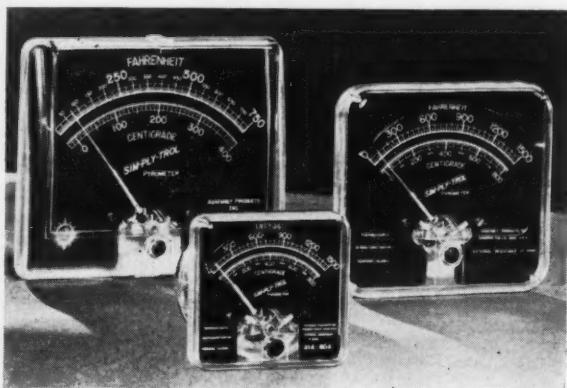
Measures temp from -200 to 3000°F . . .

calibrating resistor is included to adjust meter to different lengths of thermocouple leads

Uses: For measurements of temperature from minus 200 to plus 3000 degrees Fahrenheit. The corresponding Centigrade is shown.

Features: Automatic cold junction compensation is accomplished with bimetal spiral on bottom of torsion spring. Variable permeability magnetic shunt across poles of magnet corrects for copper error.

Description: Black face pyrometers are made in three sizes and nine standard temperature ranges. Sizes are: model 451 4 1/2", model 351 3 3/4", and model



Black faced pyrometers measure 2 1/2, 3 3/4, and 4 1/2 inches

261 2 1/2". All pyrometers are for semi-flush mounting in panels of non-magnetic material. Clear plastic front cover is one piece construction and will snap-fit to case. It is dustproof and free to breathe with changes in atmospheric pressure.

Millivoltmeter movements are medium high sensitivity at four ohms per mv, (222 ohms for 2500°F). They may be supplied with calibration for any standard type of thermocouple. Calibrating resistor is included for adjusting meter to different lengths of thermocouple leads.

(Product of Assembly Products Inc., Dept. CP, Main at Bell St., Chagrin Falls, Ohio . . . or for more information check CP 3611 on handy form, pages 2 and 3.)

Instrument to observe and control fibers in dyeing process

Technical bulletin reviews method for observing the appearance and behavior of textile fibers and dye bath during continuous dyeing cycle. Microdyescope is not manufactured as a unit. List of suppliers of parts from which unit may be assembled is provided in bulletin. Instrument permits visual and photographic observation of dyeing phenomena approximating conditions encountered in usual commercial dyeing process. Discussion includes several dyeing studies carried out with instrument.

Instrument provides means for control of all factors believed important in dyeing process. Microdyescope also provides continuous microscopic examination of same fiber or fibers at all states of operation, including wet processes either preceding or following the dyeing cycle.

Bul 825 is issued by Calco Chemical Division, American Cyanamid Co., Dept. CP, Bound Brook, N. J. When inquiring specify CP 3612 on handy form, pages 2 and 3.

An Outstanding Record of Acceptance!

TRADE
LESLIE
MARK

Floatless
LEVEL CONTROL

LESLIE Floatless Level Control installation on five 85-90000 kw generators, maintaining the hotwell level $\pm 1''$ by controlling 6" valve in condensate pump discharge—in service 12 months—led to 16 more installations for same company.

The above is typical of the fast growing acceptance of this rugged and accurate level control.

ADVANTAGES

- EASY TO INSTALL
- ACCURATE REGULATION ($\pm 1''$ Water Column)
- NO FLOATS, STUFFING BOXES, ETC.
- MULTI-MEDIUM ACTUATED
- DIAPHRAGM PRESSURE ELEMENT
- ACTION REVERSIBLE

Applications: On open and pressurized vessels, including boilers, tanks, evaporators, heaters, standpipes, etc.

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Look for LESLIE Regulators under "Valves" or "Regulators" in your Classified Telephone Directory in leading industrial cities where LESLIE factory-trained engineers are located.

LESLIE CO., 281 Grant Avenue, Lyndhurst, New Jersey

PRESSURE REDUCING VALVES • PRESSURE CONTROLLERS • FLOATLESS LEVEL CONTROLS
PUMP GOVERNORS • TEMPERATURE REGULATORS
SELF CLEANING STRAINERS • AIR HORNS • STEAM WHISTLES

When inquiring check CP 3613 on handy form, pgs. 2-3

wheelco  instrumentality

VERSATILE
variety of control

SIMPLE
interchangeable
assemblies

ACCURATE
1/4 of 1% of full scale

ECONOMICAL
low original cost

capacilog recorder

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PROCESS INSTRUMENTATION

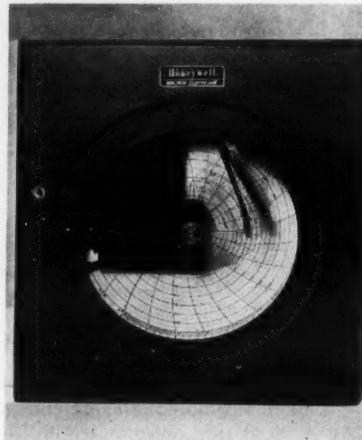
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permits fast reading
of program . . .**

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**Get Laboratory Accuracy
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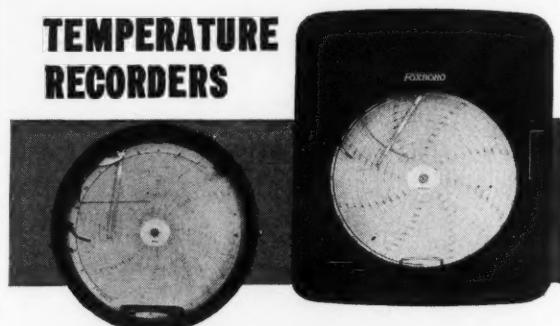
**ROCKWELL
Industrial
METERS**

The liquid content in the formula so carefully developed in your laboratory can be exactly controlled in production when Rockwell meters are assigned to the job. You'll get the highest measurement accuracy while saving materials, labor and money. In addition your accountants will gainfully use the records Rockwell meters provide for inventory and cost control. Write for full details.

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**TEMPERATURE
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When inquiring check CP 3610 on handy form, pgs. 2-3

CHEMICAL PROCESSING

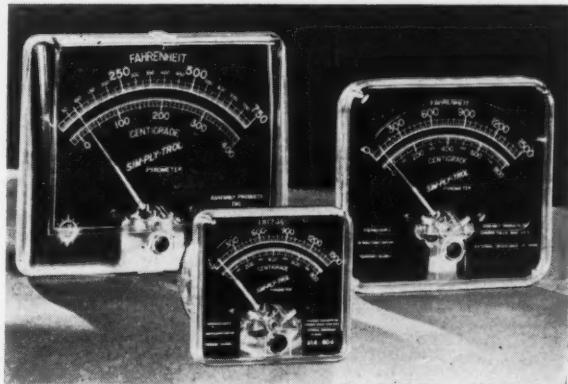
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- NO FLOATS, STUFFING BOXES, ETC.
- MULTI-MEDIUM ACTUATED
- DIAPHRAGM PRESSURE ELEMENT
- ACTION REVERSIBLE

Applications: On open and pressurized vessels, including boilers, tanks, evaporators, heaters, standpipes, etc.

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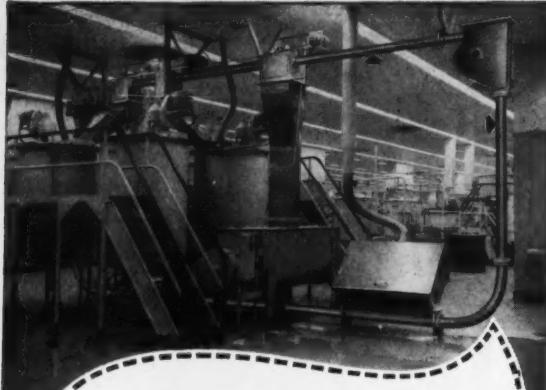
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LESLIE CO., 281 Grant Avenue, Lyndhurst, New Jersey

PRESSURE REDUCING VALVES • PRESSURE CONTROLLERS • FLOATLESS LEVEL CONTROLS
PUMP GOVERNORS • TEMPERATURE REGULATORS
SELF CLEANING STRAINERS • AIR HORNS • STEAM WHISTLES

When inquiring check CP 3613 on handy form, pgs. 2-3



where immaculate
cleanliness is vital
UPJOHN specifies

the amazingly versatile

Hapman TUBULAR CONVEYORS



Here you can visualize the unusual versatility of Hapman Sealed-pin Chain Conveyors. First, note this installation photo from The Upjohn Company, Kalamazoo, Michigan. On a job where *sanitation*

is vital, Hapman Conveyors carry heavy pharmaceutical powders from one processing unit to another. The circuit is dust-proof and odor-confining.

Contrast with this the many applications of Hapman Conveyors which carry sludge from grinding wheels or quench tanks... chips from machine tools... coal and carpet tacks... ground glass and grain.

Then consider: To solve so many conveying problems—with such vastly varied requirements—Hapman Conveyors must offer outstanding advantages. And they do—in handling almost any kind of wet or dry flowable materials. Get full details as related to *your* problems.

Write for your copy of Hapman Bulletin CP-752 for details and applications

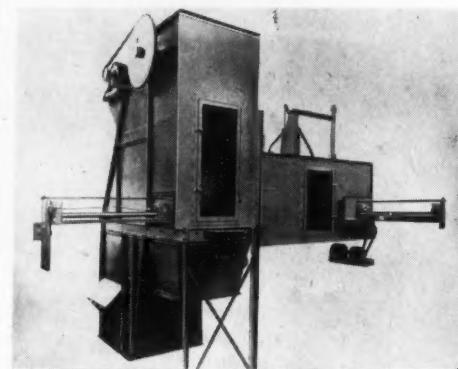
Hapman CONVEYORS, INC.
DIVISION HAPMAN-DUTTON COMPANY
KALAMAZOO MICHIGAN

When inquiring check CP 3614 on handy form, pgs. 2-3

Material Handling

Barrels Are Hoisted, Emptied, Washed, Dried, and Lowered Automatically at Rate of 40 per Hour

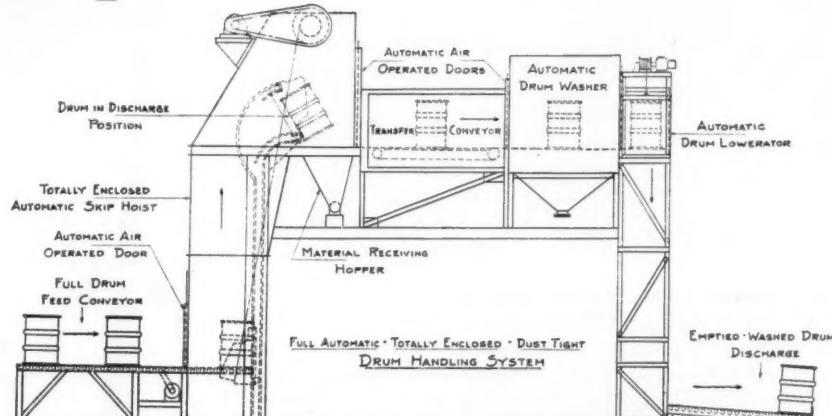
Totally enclosed, dust-tight conveyor system eliminates manual lifting, of 30- or 50-gal containers and cuts work hours



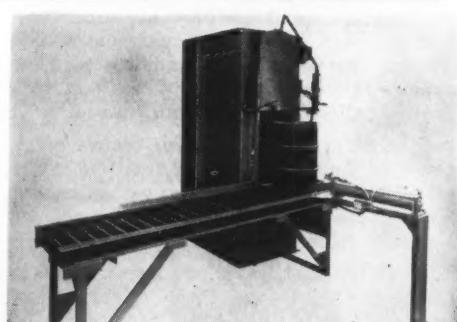
Upper section of the skip-hoist enclosure is shown and also the transfer conveyor section. Skip-hoist enclosure is at right angles to the conveyor, rather than in-line, as shown in the drawing.

In operation, a roller conveyor brings full drums to the skip-hoist enclosure, an air-operated door opens automatically, and a full drum is pushed in and onto an elevating carriage by an air-operated pusher. As the door closes, clamps on the carriage grasp the drum. The hoist then elevates and up-ends the drum, emptying its contents through a grating into a receiving hopper.

Drum is then released from the clamps and drops onto the grating which is electrically vibrated to dislodge any material that might be left in the drum. The air-operated exit door opens, a ram pushes the drum onto



Drum to be emptied is shown entering the automatic conveying system. Here again, the drum enters at right angles to the skip-hoist enclosure rather than being fed directly, as the line drawing shows.



the transfer conveyor, the exit door closes, the empty skip-hoist carriage returns to the loading position, and the entrance door opens again to receive the next drum.

The transfer conveyor then moves the drum into the automatic washer where it is cleaned both inside and out, washed, rinsed, and blown dry. Automatic doors seal the washer chamber during cleaning. From the washer, the drum travels to the automatic lowerator and is fed to the discharge conveyor.

(Drum conveyor system developed by the Gifford-Wood Co., Dept. CP, Hudson, N. Y. . . or for more information check CP 3615 on handy form, pages 2 and 3.)

Flexibility is featured in conveyor with variable speed drive . . .

table unit has adjustable legs to fit requirements of individual users

Uses: As a flexible conveying unit for inspection of parts, packaging, handling wet materials, etc.

Features: Variable speed drive powers table conveyor belt at normal rate of 20 fpm with a maximum of 40 fpm possible. Unit is set at waist or stool height, but adjustable legs give it flexibility in accordance with individual requirements.

Description: As illustrated, table conveyor has a 12" wide belt, but can be made to any length or width. Belt can be of white neoprene, stitched or woven canvas,

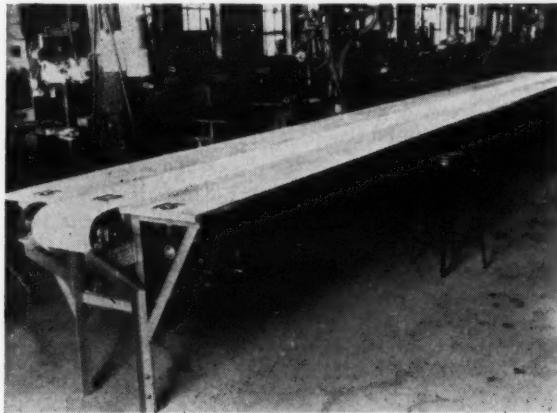


Table conveyor has adjustable legs for working height

or rubber, depending on its use. Motor size depends on length of belt and material being handled. A 15" maple table is constructed on each side of the traveling belt. The table can also be constructed of either masonite or metal.

(Product of the Flexoid Conveyor Company, Dept. CP, 1543 E. 23rd St., Cleveland 14, Ohio . . . or for more information check CP 3616 on handy form, pages 2 & 3.)

Conveys large or small packages along gravity rollers

Twelve-page bulletin provides specifications for gravity roller conveyor as well as component rollers. Units are shown installed in plants and illustrations also view curved sections. Featured item is dual-purpose unit which handles large and small packages on same conveyor. Packages are channeled over rollers with protective side rails. By turning the conveyor line over, packages larger than width of conveyor may be carried to location. Bul 100 is issued by H. J. Ferguson Co., Dept. CP, 149 West Ave., Jenkintown, Pa. When inquiring specify CP 3617 on handy form, pages 2 and 3.



From the Filice & Perrelli Canning Co., Inc., Richmond, California, warehouse, an 80-case load is delivered to a terminal across the street.

quick as a flash . . .

Towmotor speeds from here to there, inside the plant and out, all day long. Speed handling, production, and deliveries with Towmotor fork lift trucks. For the name of your nearest Towmotor Representative and an illustrated brochure, "Handling Materials Illustrated," write Towmotor Corporation, Div. 23, 1226 E. 152nd Street, Cleveland 10, Ohio.

R E C E I V I N G • P R O C E S S I N G • S T O R A G E • D I S T R I B U T I O N

When inquiring check CP 3618 on handy form, pgs. 2-3

Look!

**THE NEW
BAKER TYPE FS**
gives you the most material handling
you can get for your money in a
2000 POUND FORK TRUCK

Here's Why:

- It's BUILT to take PUNISHMENT!
- It's the most MANEUVERABLE Truck in its class!
- It's ECONOMICAL!

All the features engineered into the outstanding Baker Type FS, 2000-pound Fork Truck are described in an illustrated 8-page specification bulletin. Write for your copy.

THE BAKER-RAULANG CO.
1210 WEST 80th STREET, CLEVELAND 2, OHIO

Baker INDUSTRIAL TRUCKS

When inquiring check CP 3619 on handy form, pgs. 2-3

**MORSE
PORTABLE ROTATOR**

- MIXES
- CLEANS
- TUMBLERS

Model #200

A retractable caster frame offers simpler handling of containers with the Morse Rotator. Two Neoprene Drive Wheels prevent creeping. Four drive wheels give positive driving action and two idler wheels with Torrington Needle Bearings make the Morse Rotator a smoothly operating unit. Tipping lever included with each Rotator. Write for free folder showing complete Morse line.

Less motor and drive—Wt. 75 lbs.	\$147.75
Complete with motor—Wt. 155 lbs.	\$228.25

MORSE MANUFACTURING CO. INC.
124 Dickerson Street Syracuse 2, N. Y.

When inquiring check CP 3620 on handy form, pgs. 2-3

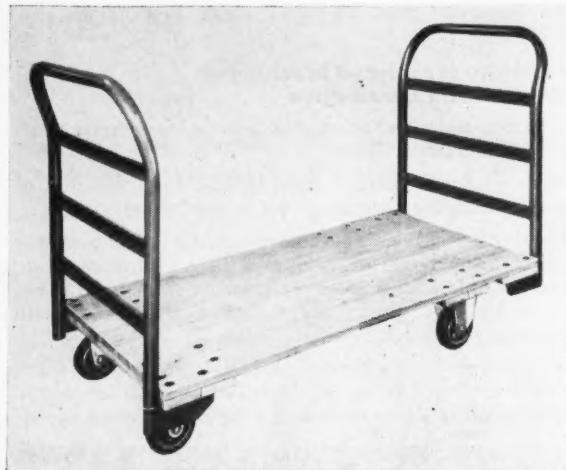
MATERIAL HANDLING

Light weight is feature of platform hand truck . . .

design of conveyance makes it easily maneuverable and yet provides strong construction

Uses: For handling materials from 750-1500 lb.

Features: Truck was developed to give user as light a unit as could be built to move a given load and yet



Unit is provided with single pipe rack or with double rack as shown

maintain a serviceable vehicle. Lightness reduces effort required to move truck and increases its maneuverability.

Description: Platform is tongue-and-grooved seasoned oak reinforced with cross battens. Casters allow easy swiveling. Truck is available with either one or two offset pipe racks. Platform can be obtained in four sizes with rubber or steel wheels of different diameters.

(Bantamweight truck is a product of The Fairbanks Company, Dept. CP, 393 Lafayette St., New York 3, N. Y. . . or for more information check CP 3622 on handy form, pages 2 and 3.)

Use overhead storage racks to eliminate congested floor space . . .

installed at fraction of cost of storage building, which would have been needed

Problem: Lack of storage space had become critical in plant which manufactured chemical compounds. Raw materials and finished products were arriving and being shipped in drum containers. When there was no place but the floor for the drums, the plant was a congested "mess." Production was slowed down and numerous man-hours were wasted in moving drums around.

Two other factors which contributed to seriousness of problem were increasing volume and current cost of new buildings (for added storage space).

Solution: Decision was made to put plant's overhead space to work. Steel storage racks for the four-high storage of drums were installed. Racks have capacity for 752 standard drums; 320 located near receiving dock for materials, and 432 located for finished products. Portable elevator was used for placement and removal of drums with minimum physical effort.

Results: Company's need for more space was solved

CHEMICAL PROCESSING

Here's the Solution to CONTAMINATION PROBLEMS

BLAW-KNOX Tight-Lip BUCKETS

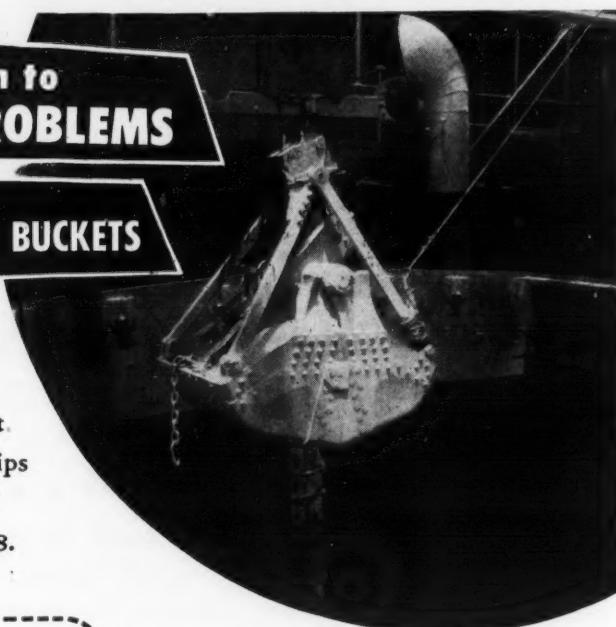
NOW you can handle granular fines without danger of contamination! Blaw-Knox Chemical and Fertilizer Buckets are equipped with tight fitting cast and ground abrasive-resisting steel lips that stop leakage. For a detailed description of all the important features, write for Bulletin 2378.

BLAW-KNOX DIVISION

OF BLAW-KNOX COMPANY

2076 Farmer's Bank Building • Pittsburgh 22, Pa.
New York • Chicago • Philadelphia • Birmingham • Washington • San Francisco

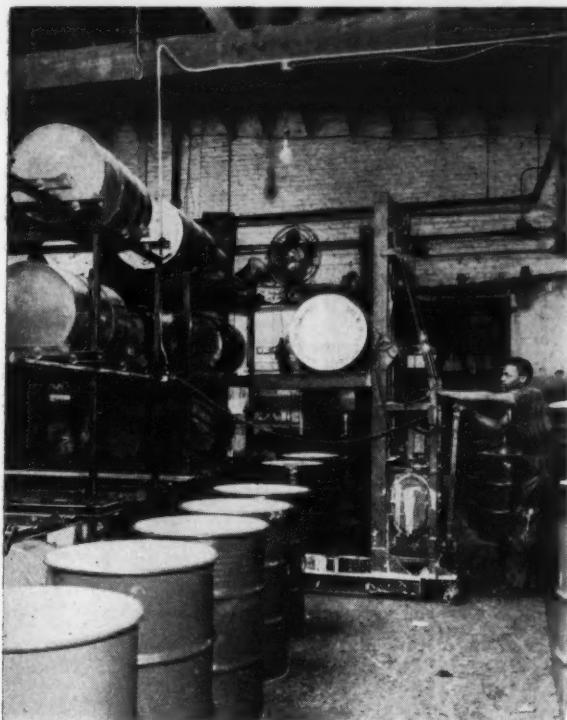
BLAW-KNOX BUCKETS
CLAMSHELL
FOR CHEMICAL AND FERTILIZER PLANTS



THERE'S A SIZE AND TYPE FOR EVERY NEED:

Bauxite • Cement Clinker • Gypsum Rock • Plaster Rock • Limestone • Kalnit & Manure Salts • Magnesite • Milorganite • Muriate of Potash • Phosphate Rock • Potash • Pyrites • Super Phosphate • Sodium Nitrate • Sulphate of Ammonia • Ilmenite • Sulphur, etc.

When inquiring check CP 3621 on handy form, pgs. 2-3



Portable elevator lifts drums to racks for storage

at small fraction of cost of new storage building which would have been required. Floor space has been "regained" for production. Output has continued to grow since racks were installed, but previously congested condition is absent. Steel racks are also available for the ceiling-high storage of skids, pallets, crates, bins, etc.

(Rack is product of Barrett-Cravens Co., Dept. CP, 4609 S. Western Blvd., Chicago, Ill. . . or for more information check CP 3623 on handy form, pages 2 & 3.)

With 1/2 hp motor, lifting machine can raise 1000-lb load 5' at 11 fpm . . .

has elevator-type brakes, chain lifted platform, and automatic mechanical stops

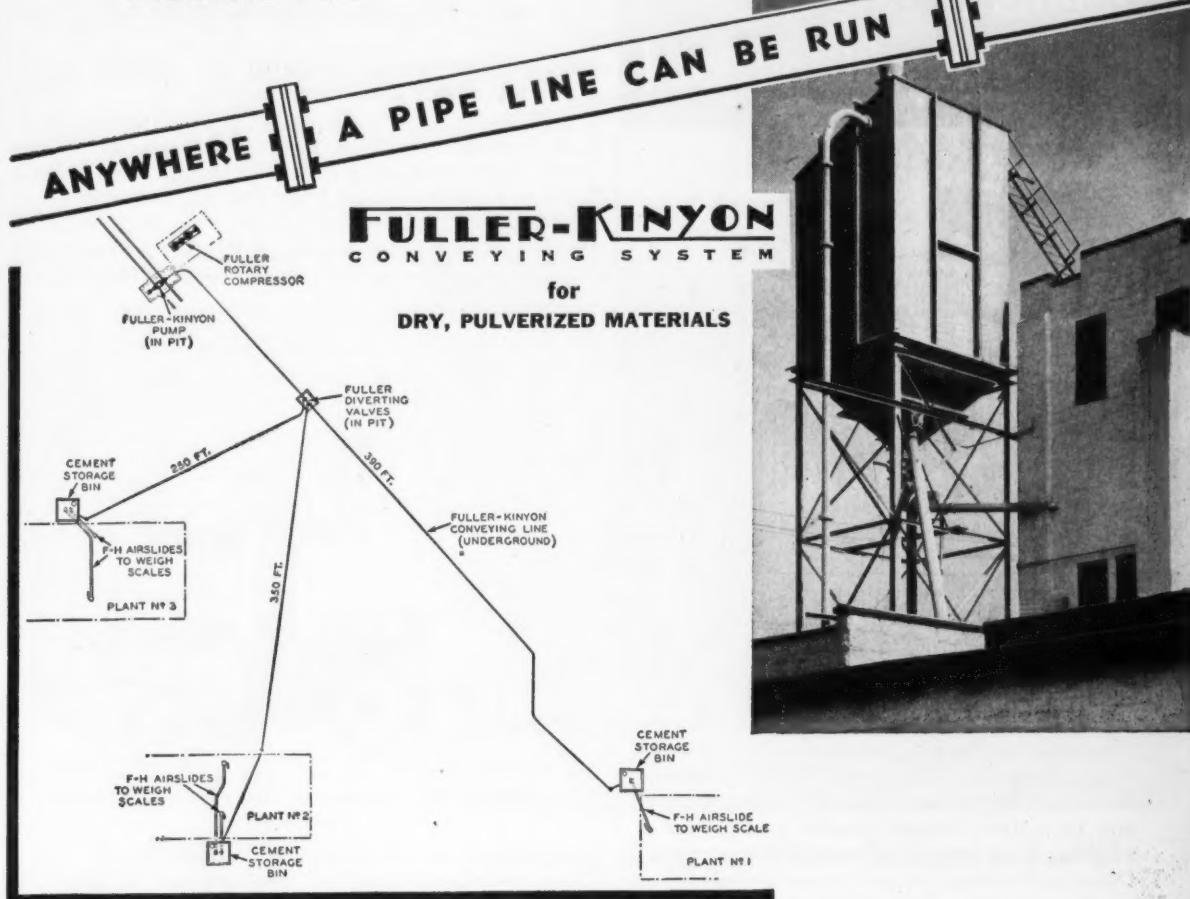
Uses: For elevating, stacking, piling, racking material of all sorts.

Features: Electric model is driven by 1/2 hp reversing motor with a drum-type controller. Lowers at 17 fpm with automatic mechanical stops and handles 1000 lb load.

Description: In addition to the electric model, Powrlift unit is available in battery model with a 6v electric-hydraulic drive with two automotive batteries wired in parallel. It lifts at 11 fpm and has fast hydraulic lowering. Overall dimensions of the Powrlift are 37x32x81" high. Platform measures 24 x 25", and lifts from 5 to 60" operating from a 110v, 60 cps AC line. Lifts are available in portable or stationary models and with load capacities ranging from 500 to 5000 lb in platform, fork, inverted, roller bed, pan, arm, skid-lift, and dumper types.

(Development of the Langley Mfg. Co., Dept. CP, 930 Cambridge, Cambridge, Mass. . . or for more information check CP 3624 on handy form, pages 2 and 3.)

Adaptable . . . Flexible . . .



Unloading . . . conveying underground . . . to three delivery points

The layout of the concrete-products plant shown above, really three plants in one, necessitated unloading all shipments of Portland cement at one particular location, but distribution to storage had to be made to three widely scattered points.

The engineers of this plant turned to Fuller for suggestions and aid in selecting the most efficient and economical method for handling the cement. As a result of studies made, and proposals submitted, they selected the Fuller-Kinyon System. Note that all conveying pipe lines are installed underground, eliminating all structural inter-

ference above ground in the yard.

Cement, received in hopper-bottom cars, is conveyed by the Fuller-Kinyon Pump, located in a pit underneath the tracks, to all storage bins, by the use of Fuller diverting valves in the transport line. The system has a capacity of 200 barrels an hour.

Conveying cement from bins to weigh scales over mixers in the plant, is accomplished by using F-H Airslides, manufactured by us. Airslides are equipped with F-H Airfeeders and F-H air-motor-operated cut-off gates, above the scales, for perfect control of each batch, in addition to clean operation and minimum power consumption.

Fuller engineers will gladly make a survey of your conveying and submit their recommendations, based strictly upon your particular needs. This, without any obligation, of course.



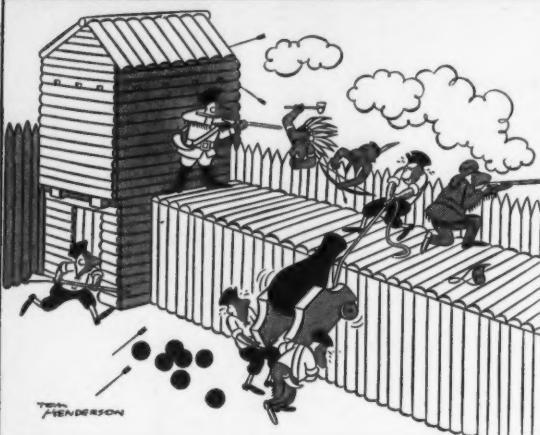
Fuller

DRY MATERIAL CONVEYING SYSTEMS
AND COOLERS—COMPRESSORS
AND VACUUM PUMPS—FEEDERS
AND ASSOCIATED EQUIPMENT

FULLER COMPANY, Cateseuqua, Pa.
Chicago 3 • 120 So. LaSalle St.
San Francisco 4 • 420 Chancery Bldg.

MATERIAL HANDLING

There's a **YALE** hoist
for every lifting job!



TO TAKE operating costs off the firing line... bring your lifting problems to your **YALE** Distributor. For a **YALE** Hand or Electric Hoist can save manpower and increase production on every lifting job.

Your **YALE** Distributor can give you valuable help in choosing the right hoist for your special needs—from the world's most complete line of hoisting equipment. He will recommend the modern, dependable **YALE** Hoist designed to solve your particular problems. Look for your local **YALE** Distributor in the Classified Directory. Or mail the coupon below.



ELIMINATE HOIST DOWNTIME with the **YALE** Cable King Electric Hoist. Exclusive Cable King Positive Load Brake Lubrication minimizes heat created by friction. And the exclusive Cable King Cooling System circulates air into all parts of the Braking Mechanism. Result: A Hoist that gives you continuous day-long, top-speed service.

YALE & TOWNE

— MAIL THIS COUPON TODAY —

The Yale & Towne Mfg. Co., Dept. 127
Roosevelt Boulevard & Haldeman Ave.,
Philadelphia 15, Pa.

I'm interested in lifting for less with a **YALE** Hoist.

Please have your local Distributor call on me
 Please send detailed literature on
 YALE Hand Hoists
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Company..... Name..... Title.....

Street.....

City..... State.....

In Canada write: The Yale & Towne
Manufacturing Co., St. Catharines, Ont.

YALE is a Registered
Trade Mark of
The Yale & Towne
Manufacturing Co.

YALE HAND AND ELECTRIC HOISTS • **YALE** GAS AND ELECTRIC INDUSTRIAL TRUCKS
YALE WORKSAVERS • **YALE** HAND TRUCKS • **YALE** PUL-LIFTS

When inquiring check CP 3626 on handy form, pgs. 2-3

Page 76

**Gas or diesel-powered, lift trucks
have quick-change clutch,
column shift . . .**

each model is rated at 3000 lb capacity at a 15" load center

Uses: For general industrial use requiring power mobility of fork lift trucks.

Features: With gas or diesel power, 3000 lb capacity fork lift trucks each have quick-change 11" industrial type clutch, single lever gear shift mounted on steering column, center point steering, and a 15" load center.

Description: Gasoline model FT30-15 is powered by 49 hp, 4-cylinder engine. Diesel model FTD30-15 has



Both gas and diesel models have 3000 lb capacity, 15" load center

engine of identical cubic inch displacement, bore stroke, and mounting dimensions. Both models have removable wet sleeve type cylinder liners and are available with five standard masts having a 72, 84, 108, 114 and 120" lift.

(Development of The Buda Company, Dept. CP, Harvey, Ill. . . or for more information check CP 3627 on handy form, pages 2 and 3.)

**Frame design of canvas basket
permits it to regain shape
after being distorted . . .**

general utility bags are available in capacity sizes from one to three bushels

Uses: General utility bag for carrying packaged goods, small parts, and odd sized products.

Features: Basket withstands severe punishment. Frame design permits it to regain its shape after being distorted. Basket is reinforced at points of stress and wear to assure longer service.

Description: Canvas basket is available in six sizes. Diameter and depth range from 17x13 to 23x20". Capacities vary from one to three bushels. Basket has double canvas bottom, leather-bound rim, and reinforced canvas handles.

(Product of W. T. Lane & Bros., Inc., Dept. CP, Poughkeepsie, N. Y. . . or for more information check CP 3628 on handy form, pages 2 and 3.)

HERE'S HOW
IT WORKS:



POSITIVE
—AUTOMATIC

are frozen or close packed. The separately mounted stripper-plate—an exclusive **M-T-MATIC** feature—applies irresistible leverage to bucket contents, pushing up and out as it starts over head pulley.

Save with **M-T-MATICS**—handle more material at same or faster belt speeds . . . cut belt replacement costs because there is much less strain on belts . . . reduce downtime and maintenance. **THOUSANDS OF M-T-MATICS ALREADY IN USE** are making money for users throughout the country. Available in all sizes—easy to install on any elevator conveyor. Order a couple at once and see for yourself.



★ Send for
prices today—
(give present bucket size)

Standard Buckets also available.

PEKAY MACHINE & ENGINEERING CO.

100 N. LA SALLE STREET

CHICAGO 2, ILLINOIS

When inquiring check CP 3629 on handy form, pgs. 2-3

CHEMICAL PROCESSING

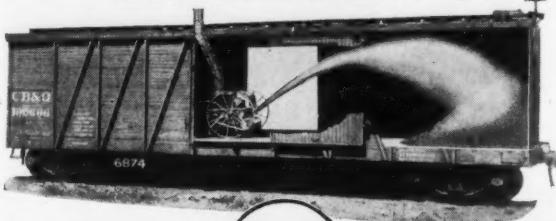
YOU DON'T HAVE TO
KICK THE
BUCKET
TO CLEAR IT—
IF IT'S A

PEKAY
M-T-MATIC
SELF-CLEANING
ELEVATOR BUCKET



• An S-A portable Box Car Loader automatically loads and trims box cars in a fraction of the time ordinarily required by hand methods. The loader operates unattended after being placed in the car and requires only part time

Write for Bulletin No. 948 with full details



STEPHENS-ADAMSON
MFG. CO.
Tellevel-Bin Level
Controls Car Loaders
Sack Speed Reducers
SealMaster Ball Bearings
Car Pullers Winches
11 RIDGEWAY AVE., AURORA, ILLINOIS

When inquiring check CP 3630 on handy form, pgs. 2-3

If You've Got to
CONVEY MATERIAL

...UPWARD
LATERALLY
or on an INCLINE...

Install
Screw-Lift
Screw-Veyor

•IT'S CLEANER •FASTER
•DUST-PROOF •MOISTURE-PROOF
•MORE EFFICIENT •REQUIRES LESS SPACE
•ELIMINATES COSTLY HANDLING

Conveys any free-flowing material (dry or moist) from flour and powders, to peanuts, spent grain, soy-beans, etc. Elevates to any height to synchronize with your processing operations. Forms a totally enclosed system.

Write for Forms M-500-2, M-600-2.



When inquiring check CP 3631 on handy form, pgs. 2-3

JULY, 1952

MATERIAL HANDLING

Report hand pump handles difficult liquids...

suitable for aromatic, chlorinated or petroleum solvents

Industrial hand pump is similar in design to Tokheim double-action hand pump. It is reported to make use of specially developed internal parts designed to withstand action of variety of other liquids.

Extensive tests are said to confirm value of this pump in handling many types of acetates, alcohols, glycols,



For handling caustic soda solution, hand pump is Permolited on inside to prevent rust and corrosion

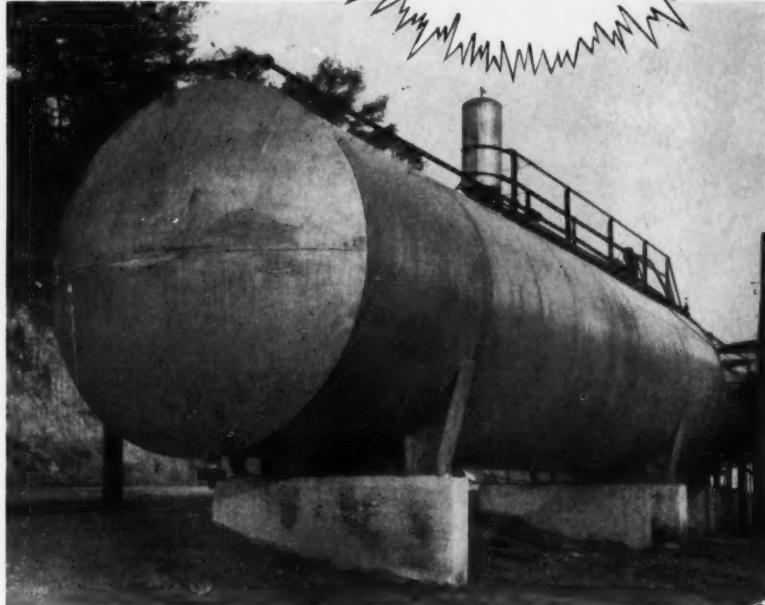
ketones, ethers, and other liquids which standard pumps cannot usually handle. It is suitable for aromatic, chlorinated, and petroleum solvents.

Standard model may be used for ammonia, ammonium hydroxide, creosote, and petroleum products.

For handling caustic soda solution, Tokheim pump has cast iron body, which is Permolited on inside to prevent rust and corrosion.

(Product of Tokheim Oil Tank and Pump Company, Fort Wayne, Ind. . . . or for more information check CP 3632 on handy form, pages 2 and 3.)

HORTON ALUMINUM TANK



Storing Ammonium Nitrate Safely for Hercules Powder Company

A rather strong solution of ammonium nitrate is used in the manufacture of industrial explosives at the Bessemer, Alabama plant of Hercules Powder Company. The corrosive nature of this liquid always made efficient storage a problem — until the installation of a Horton aluminum tank. This specially-fabricated structure has proved successful in eliminating metallic contamination.

Aluminum is only one of several corrosion-resistant materials used in building Horton tanks and processing equipment for the chemical industry. Other solid metals include chrome nickel or straight chrome stainless steel, monel or nickel. We also erect clad steels and linings from a variety of metals.

Write our nearest office for information or quotations. There is no obligation on your part.

CHICAGO BRIDGE & IRON COMPANY

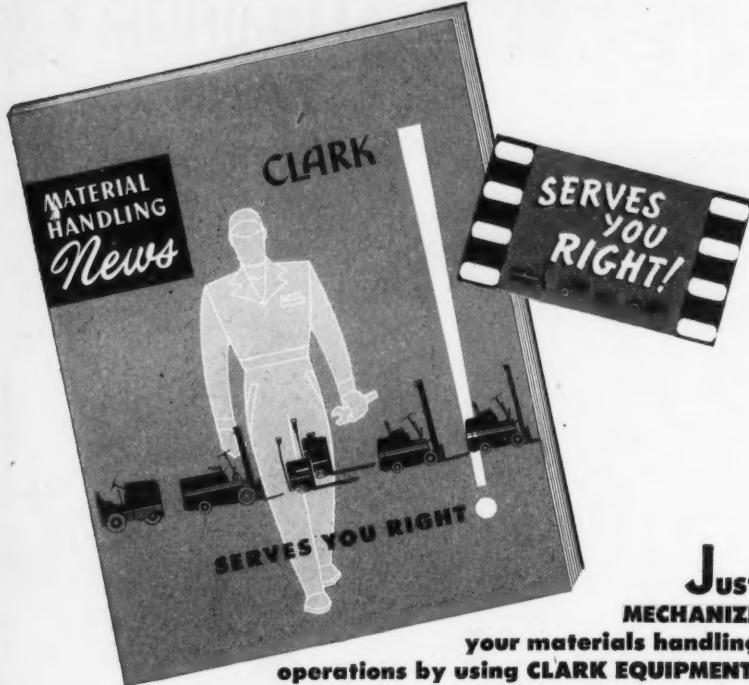
Atlanta 3 2107 Healey Bldg.
Birmingham 1 1533 North Fifth St.
Boston 10 1007—201 Devonshire St.
Chicago 4 2116 McCormick Bldg.
Cleveland 15 2212 Gulfhall Bldg.
Detroit 26 1535 Lafayette Bldg.
Houston 2 2131 C & I Life Bldg.

Los Angeles 17 1536 General Petroleum Bldg.
New York 6 3314—165 Broadway Bldg.
Philadelphia 3 1630—1700 Walnut St. Bldg.
San Francisco 4 1545—200 Bush St.
Seattle 1 1307 Henry Bldg.
Tulsa 3 1649 Hunt Bldg.
Washington 6, D. C. 1158 Cafritz Bldg.

Plants at BIRMINGHAM, CHICAGO, SALT LAKE CITY, and GREENVILLE, PA.

When inquiring check CP 3633 on handy form, pgs. 2-3

HOW TO GET THE MOST FOR YOUR MONEY!



JUST MECHANIZE
your materials handling
operations by using **CLARK EQUIPMENT.**
It's as simple as that.

• That's what they all say? Perhaps. But CLARK backs up its claim with facts and unmatched performance.

On the questions of . . . ✓ Number of Trucks in Use

✓ Quality, Longevity ✓ Efficiency and Performance

✓ Savings Achieved

✓ Economy of Operation and Maintenance

✓ Customer Satisfaction

✓ Factory and On-The-Ground Service

... there is at hand—and available to you—overwhelming evidence that CLARK Serves You Right!

The whys and wherefores are available to you in two new media—the "SERVES YOU RIGHT" edition of our Material Handling News, and our new movie on the use of fork-lift trucks and industrial towing tractors in Plant Maintenance Work.

Each of these items is free to you—the 15-minute sound movie, black-and-white, on a loan basis. They'll tell you and show you how CLARK enables you to get the **MOST** for your money. Just fill out the coupon, attach to your business letterhead and place in your "out-going" mail basket.

CLARK ELECTRIC AND GAS POWERED
FORK TRUCKS

AND POWERED HAND TRUCKS • INDUSTRIAL TOWING TRACTORS

INDUSTRIAL TRUCK DIVISION • CLARK EQUIPMENT COMPANY • BATTLE CREEK 9, MICHIGAN

Please send: Material Handling News Movie "Serves You Right"
 Have Representative Call.

Name _____
 Firm Name _____
 Address _____
 City _____ Zone _____ State _____

AUTHORIZED CLARK INDUSTRIAL TRUCK PARTS AND SERVICE STATIONS IN STRATEGIC LOCATIONS

When inquiring check CP 3634 on handy form, pgs. 2-3

MATERIAL HANDLING

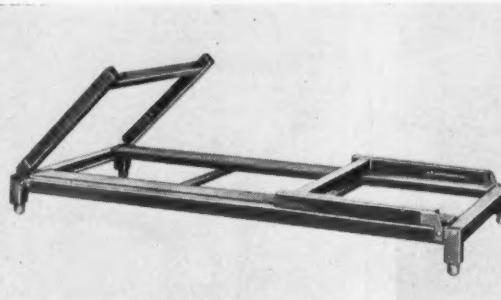
Storing, stacking space is saved with telescoping steel tubing racks . . .

lift control permits quick folding for return shipping of frames

Uses: For unit handling of sizeable, stampings, parts, etc, but is also designed so that a solid floor can be laid for the handling of bulk goods.

Features: Principal advantage of the collapsible feature is that it allows conservation of space and elimination of loose parts.

Description: Rack is constructed of welded steel tubing. Nesting caps on feet permit stacking loaded racks in production, storage or shipping. With end



Storage rack is quick-collapsing

frames raised, telescoping tubular inserts provide positive locking. A simple lift control on each end frame permits quick folding for return shipping.

(Development of Equipment Manufacturing Inc., Dept. CP, 21550 Hoover Rd., Detroit 5, Mich. . . or for more information check CP 3635 on handy form, pages 2 and 3.)

Coal loader has capacity of 5 tons per minute

Eight-page bulletin reports on loader that feeds coal from free flowing or frozen stock piles to trucks at rate of 5 tons per minute. Discharge chute has ample clearance for handling 10 to 12-ton trucks.

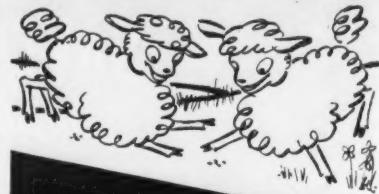
Transmission of loader is enclosed and is equipped with anti-friction bearings. Gears, clutches, and bearings operate in oil bath. Unit is highly maneuverable and mobile. Path 9 feet wide is cleared with no auxiliary needed nor any hand shoveling. Loader is available in different models and is easily converted for moving stone or gravel or for snow removal.

Bulletin No. H-75 Coal is issued by George Haiss Mfg. Co., Inc., Div. of Pettibone Mulliken Corp., Dept. CP, New York 51, N. Y. When inquiring specify CP 3636 on handy form, pages 2 and 3.

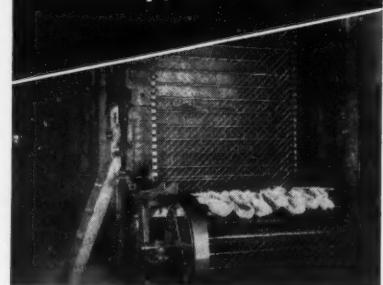
Drums, barrels — anything with a lip, are all drained with aid of sling . . .

heavy chain and grab hooks weighing 8½ lb can support up to 1000 lb

For handling drums, barrels, kegs, or anything with a lip, such as on a steel drum or barrel, and for general purpose handling in loading or unloading trucks, this sling is especially suited. Will also handle drums for



this conveyor belt
is woolly, but not wild!



That's a true turnabout for this example of a specially designed Cambridge woven wire conveyor belt. This one carries wet, washed wool through a drying oven to remove moisture and washing chemicals from the fibre. There's no wild belt travel because the Cambridge Chain Drive design used here prevents the belt from riding from side to side across the pulleys . . . maintains straight belt movement.

Open mesh of the wire belt permits free, even heat circulation. All-metal construction gives longer belt life and lower maintenance costs.



Whether you're processing textile fibres, foods, chemicals, metal or ceramic products, a Cambridge woven wire conveyor belt can help you cut production costs and maintain product uniformity by combining movement with processing. But don't have the wool pulled over your eyes on conveyor belt design . . . be sure to call in your Cambridge field engineer for his recommendation on the proper—

CAMBRIDGE WOVEN WIRE CONVEYOR BELT —any metal or alloy, mesh or weave.

Write direct or look under "Belting-Mechanical" in your classified telephone directory.

FREE BELT MANUAL contains information on conveyor and belt design and specifications, metallurgical data and belt maintenance. Write for your copy today.



The Cambridge Wire Cloth Co.
Dept. F • Cambridge 7, Md.



OFFICES IN PRINCIPAL INDUSTRIAL CITIES

When inquiring check CP 3637 on handy form, pgs. 2-3

CHEMICAL PROCESSING

HOWE
Teleprint



JUST OFF THE PRESS

Remote Weight Recorder



Cabinet Dial Scale

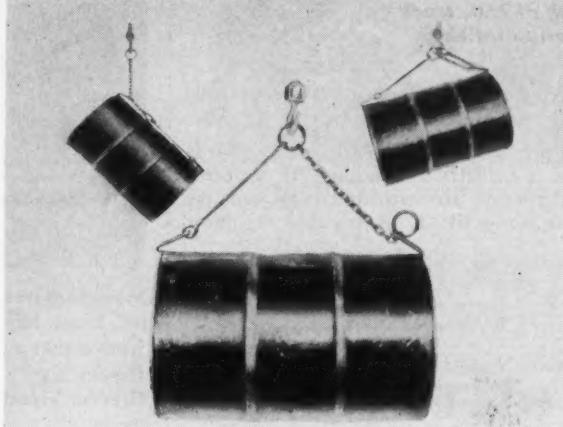
The Howe Teleprint Electronic Remote Weight Recorder is the most revolutionary development in the scale and weight printing fields! For use with Howe Tape-Drive Dials for motor truck scales and general industrial scales. Records weights on tickets, forms, tapes.

HOWE SCALE
RUTLAND, VERMONT

Dept. CP7, Rutland, Vermont
Please send me:
HOWE TELEPRINT FOLDER—Form No. 681
HOWE TAPE-DRIVE DIAL SCALES—Form No. 666

Name _____
Title _____
Company _____
Address _____
City _____ State _____

MATERIAL HANDLING



Speeds up loading, unloading of barrels, drums, etc

draining purposes. With a capacity of 1000 lb, sling is constructed of heavy welded chain and forged grab hooks; weighs approximately 8½ lb. Can pick up drum or barrel from lying position and set it on end. (Development of The Palmer-Shile Co., Dept. CP, 16016 Fullerton, Detroit 27, Mich. . . or for more information check CP 3639 on handy form, pages 2 and 3.)

Floor-to-floor or truck-to-truck, portable load carrier does heavy duty . . .

requiring no sub-surface preparation, installation is a simple matter

Uses: For moving material through a plant having different floor levels or for loading material onto trucks or box-cars without removing it from the original carrier.

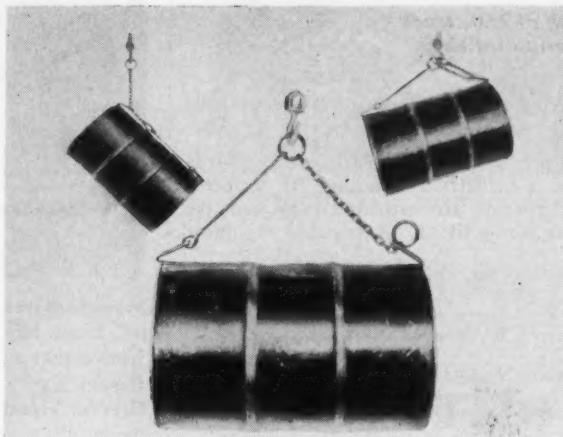
Features: Can be installed anywhere as no sub-surface is necessary. Base plates can be bolted to the floor for quick mounting or the device can be furnished with casters to enable it to be used for portable operation inside or out.

Description: With the "Leveler," loads up to 6000 lb can be raised 5' in 50 sec by means of a fully-enclosed 1 hp motor of the intermittent type. Platform, 8' x 6' x 6", is controlled by four lifting cables of plow steel having a total strength of 26,400 lb. Overall height is 7' 10".

Unit's centrifugal governor acts as an emergency brake, while top and bottom stops have been made more positive.

(Development of the Service Caster & Truck Corp., Dept. CP, Albion, Mich. . . or for more information check CP 3640 on handy form, pages 2 and 3.)

MATERIAL HANDLING



Speeds up loading, unloading of barrels, drums, etc

draining purposes. With a capacity of 1000 lb, sling is constructed of heavy welded chain and forged grab hooks; weighs approximately 8½ lb. Can pick up drum or barrel from lying position and set it on end.

(Development of The Palmer-Shile Co., Dept. CP, 16016 Fullerton, Detroit 27, Mich. . . or for more information check CP 3639 on handy form, pages 2 and 3.)

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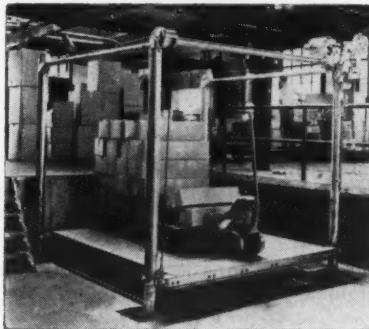
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Unit's centrifugal governor acts as an emergency brake, while top and bottom stops have been made more positive.

(Development of the Service Caster & Truck Corp., Dept. CP, Albion, Mich. . . or for more information check CP 3640 on handy form, pages 2 and 3.)



Portable load carrier can be used either inside or out

When inquiring check CP 3638 on handy form, pgs. 2-3

JULY, 1952

SAVE TIME AND MANPOWER

REDUCE PRODUCT LOSS

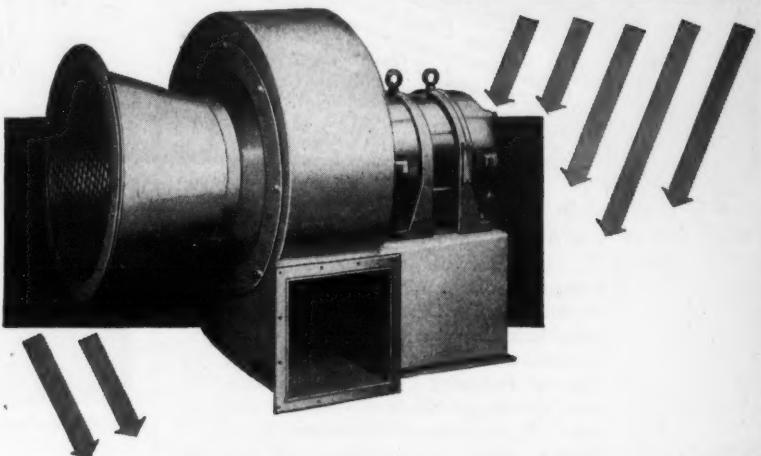
DECREASE COSTS

IMPROVE LABOR RELATIONS



with the Sprout-Waldron

car loader



Loading freight cars with bulk materials need no longer be an expensive and disagreeable task. The S/W Car Loader does the job fast and economically with practically no labor and with full utilization of the car's capacity. Product loss is all but eliminated and no man is required to work inside hot, dirty boxcars.

Let your **SPROUT-WALDRON MAN** demonstrate how our Car Loader can decrease costs and help improve labor relations, or write for full details to Sprout-Waldron & Co., Inc., 10 Logan Street, Muncy, Pennsylvania.



SPROUT-WALDRON

The Best in PROCESSING EQUIPMENT Since 1860

When inquiring check CP 3641 on handy form, pgs. 2-3

*Meeting the Challenge
in Packaging Modernization*

*For: Better Cost Control
Safer Quality Control*

EXACT WEIGHT Shadowgraph with allied equipment weighing charges of plastic materials for the Press.

Sales
&
Service
from
Coast
to
Coast

Packaging takes a pretty stiff bite out of total production costs. This is why substantial capital expenditures are going into 1952 modernization. Equipment-wise top management attending the National Packaging Exposition in Atlantic City were seeking answers to (1) reduced operating costs (2) increased plant output (3) reduced physical labor (4) smaller losses per unit package (5) speed and improved packaging (6) assured reliable operation. EXACT WEIGHT Scales, individually or with allied and coordinated equipment meet this challenge squarely. One group of models the "Selectrol," electronically controlled, delivers 100% product check at high speed. Many other models, semi-automatic in type, (as illustrated above) accomplished like results with minimum human effort. Hundreds of models are available for packaging tasks that by virtue of their nature require manual application. Of one thing you can be sure. If it's EXACT WEIGHT Scale equipped it meets the challenge for saving time, money, product and labor. Write for details to fit your operation.

EXACT WEIGHT SCALES

Industrial Precision

THE EXACT WEIGHT SCALE COMPANY

904 W. Fifth Ave., Columbus 8, Ohio
2920 Bloor St., W., Toronto 18, Canada

When inquiring check CP 3642 on handy form, pgs. 2-3

Page 80

MATERIAL HANDLING

Clamp attachment of fork truck grips cartons in unpalletized handling . . .

hydraulic system permits clamping pressure adjustment according to weight of cartons

Carton clamp attachment for Yale fork truck affords efficient method of unpalletized handling of different size cartons. Clamp arms are articulated to equalize pressure on cartons being lifted. Adjustable regulator



Carton clamp attachment of truck stacks eight television sets in an appliance warehouse

on hydraulic system permits adjustment of clamping pressure according to weight of cartons. Regulator also limits pressure to prevent crushing of carton.

In an appliance warehouse, carton clamp handled one, two, four, six, and eight television sets in cartons at the same time. These cartons were stacked four high without use of pallets.

(Product of The Yale & Towne Manufacturing Company, Philadelphia Division, Dept. CP, Philadelphia 15, Pa. . . or for more information check CP 3643 on handy form, pages 2 and 3.)

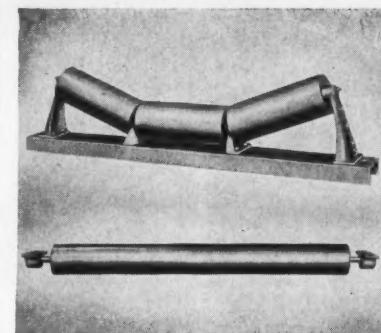
Operator has fingertip control at all times when using powered hand truck . . .

with articulation of 1 1/8", power drive wheels take rough, uneven floors in their stride

Uses: For moving material or equipment around the plant, loading or unloading at the dock, handling skids or pallets, etc.

Features: Operator has fingertip control at all times. Power drive wheel articulation of 1 1/8" gives unusual traction under adverse conditions such as uneven floors, floors worn and roughened with use. Truck glides over door saddles, goes up and down ramps easily.

Description: In addition to simplified operation, Go-Getter model shown has automatic braking of the "Deadman" type and operates with the handle in any



Improve
Belt
Conveyor
Performance
WITH
HEWITT-ROBINS
IDLERS

More features: Sturdy construction assured by Channel Base, Rigid Truss design—One-Shot Lubrication from either side—Triple Grease Seal—over-sized bearings.

Greater Selection: Full range of styles and sizes to fit every job requirement.

Trouble-free: Last longer under the rigors of on-the-job operation.

Better availability: What you want when you want it. Strategically located stocks for your convenience throughout the country.

Select the right idler for your job. Write for Bulletin No. 142

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Hewitt Rubber Division
Hewitt Rest foam® Division

Robins Conveyors Division
Robins Engineers Division

When inquiring check CP 3644 on handy form, pgs. 2-3

ALLIS-CHALMERS
Thermo-Deck
HEATING UNIT

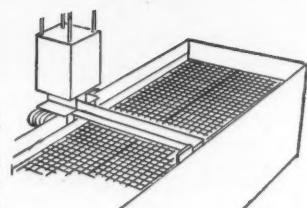
NO MORE BLINDING!

SCREENS
MOIST
FINE
MATERIALS

Write today for new Bulletin 07B7812 — full of helpful information on screening fine moist materials. Allis-Chalmers, Milwaukee 1, Wisconsin.

A-3744

Thermo-Deck is an
Allis-Chalmers trademark.

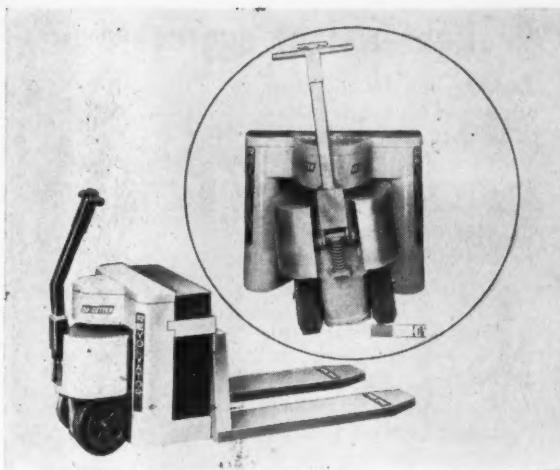


ALLIS-CHALMERS

When inquiring check CP 3645 on handy form, pgs. 2-3

CHEMICAL PROCESSING





Has power drive wheel articulation of 15°

position, insuring maximum safety, especially in cramped quarters. A dynamic brake controls the heavy loads on steep ramps, holding downhill speed to approx 2 mph. (Development of the Revolvator Company, Dept. CP, North Bergen, N. J. . . or for more information check CP 3646 on handy form, pages 2 and 3.)

**Pedal pressure action raises, lowers
750 lb load on platform
hydraulically . . .**

model has positive locking safety brakes, heavy-duty swivel casters

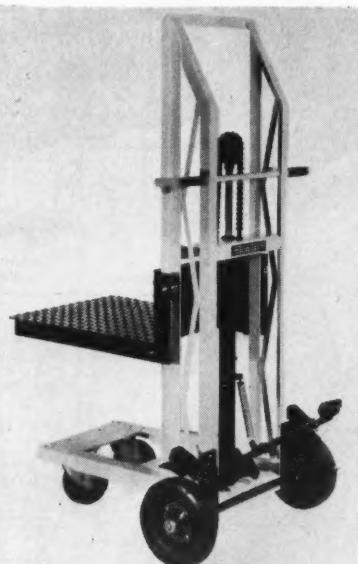
Uses: For moving heavy loads up to 750 lb.

Features: Loads are raised or lowered hydraulically by "Step-on-It" pedal pressure.

Other features include positive locking safety brakes and heavy-duty, dual ball bearing, 6" diam swivel casters.

Description: Aside from slight modifications to accommodate the large casters mentioned and 10" solid rubber rear wheels, Big Joe Model 14S platform lift is similar to manufacturer's model 14 which has 3" casters. Lifting height of the newer model is 55½". There are eight other models in the line including adjustable fork lifts and electrically controlled hydraulic units.

(Development of the Big Joe Manufacturing Co., Dept. CP, 184 N. Franklin St., Chicago 6, Ill. . . or for more information check CP 3647 on handy form, pages 2 and 3.)



Can lower or lift 750 lb 55½"



A new, big sixteen-page catalog gives complete engineering specifications, drawings, illustrations and descriptions of 25 different types of Alnico Magnetic Separators for use in the chemical industry. Get your copy today....It's FREE!

Use the coupon below.

DO YOU KNOW... that ERIEZ designed every major type of permanent magnetic separator on the market today? These include Alnico Magnetic Pulleys, Drums, Pipeline Traps, Conveyor Magnets, Pipe Rolls, Micro-Magnetic Separators, Magnetic Humps, Industrial Plate-Type Magnets and the new revolutionary ATOMagnets! ERIEZ research can help you too!



ERIEZ Manufacturing Company, 201 State Street, Erie, Pa.

My Contamination or Separation Problem is: _____

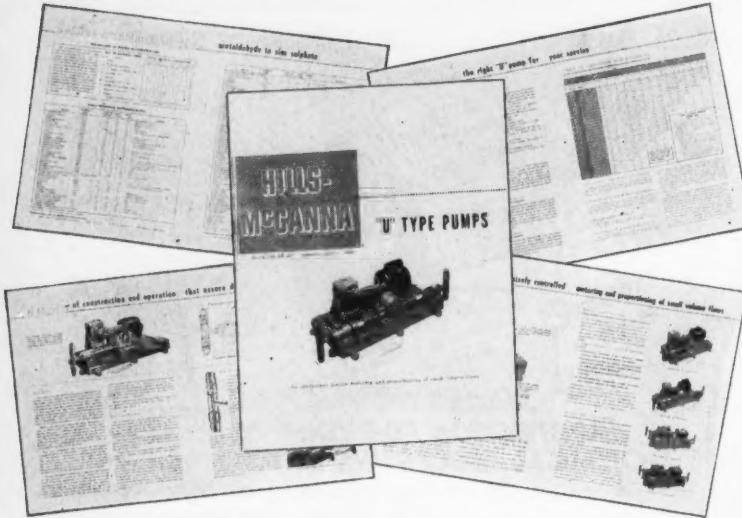
Please Send Me the **FREE** Catalog #15
Name _____ Title _____

Company Name _____
Street _____
City _____ Zone _____ State _____

52-G

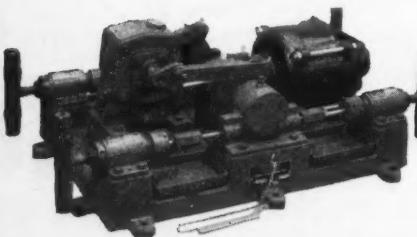
When inquiring check CP 3648 on handy form, pgs. 2-3

Here's a handy guide to the selection of metering and proportioning pumps



In this new catalog and pump selection manual for Hills-McCanna "U" Type Metering and Proportioning Pumps is all the information, including prices, for the selection of exactly the right pump for handling over 300 substances. Clearly and concisely, this helpful booklet gives all the necessary information and specific recommendations to cover the vast majority of needs that can be filled with a Hills-McCanna "U" Type Pump.

If your operations involve the metering or proportioning of small volume flows, you will find this catalog a useful addition to your files. We will be pleased to send you a copy on request. **HILLS-McCANNA COMPANY, 2370 W. Nelson St., Chicago 18, Illinois.**



Hills-McCanna "U" Type Pumps are reciprocating, variable stroke, mechanical drive units with maximum capacities ranging from 0.10 to 24 gph. per feed. One, two, three and four feed assemblies are available. Operating pressures up to 5,000 psi. A four feed unit is shown at the left.

HILLS-McCANNA metering and proportioning pumps

Also Manufacturers of: Saunders Patent Diaphragm Valves
Force Feed Lubricators • Magnesium Alloy Sand Castings

When inquiring check CP 3649 on handy form, pgs. 2-3

MATERIAL HANDLING

With AC line or battery, truck lifts 1/2 ton through 62" . . .

battery model has charger included for maintenance

Electric lift, in the Uplifter line, has capacity of 1000 lb, a 62" lift, and is available with either 110 v AC motor which can be operated from a lighting current or a 6 v motor which will operate from an auto stor-



In battery or line models, electric lift combines safety and serviceability

age battery. Battery model incorporates a charger for battery maintenance. Uplifter uses the same type of ram and double roller chain lift employed in high lift fork trucks for added safety.

(Development of the Revolator Company, Dept. CP, North Bergen, New Jersey . . . or for more information check CP 3650 on handy form, pages 2 and 3.)

Standards for unloading flammable liquids

Revised manual brings up to date standards, which were adopted in 1942, for unloading flammable liquids from tank cars. Sectional illustrations show grounding arrangement of tank and equipment. Manual describes safety precautions which should be observed by personnel preparing various types of tank cars for unloading.

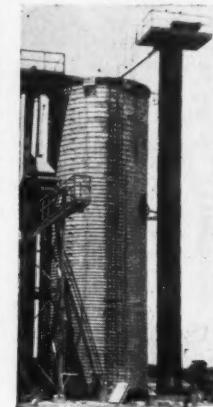
ICC regulations are listed as well as references to various state and local requirements with which consignees should be familiar. To obtain Manual Sheet TC-4, remit 20c direct to Manufacturing Chemists' Association, Inc., Dept. CP, Woodward Bldg., 15th and H St., N.W., Washington 5, D.C.

heavy stuff becomes light-weight aggregate

You can tell by the close spacing of the hoops on this 16 x 50 ft. Neff & Fry Silo that the material stored is very heavy. The silo, when filled, holds 450 tons of perlite, the raw material for Permalite—a light-weight aggregate made by The Great Lakes Carbon Co.

Our folder, "Bins With the Strength of Pillars," explains how Neff & Fry Super-Concrete Staves are made to give them rocklike density and extreme crushing strength.

If you handle any flowable bulk material, it will pay you to read our folder. Ask for a copy now while you're thinking of it.



THE NEFF & FRY COMPANY
166 Elm St., Camden, Ohio

NEFF & FRY ► **SUPER-CONCRETE STAVE STORAGE BINS**

When inquiring check CP 3651 on handy form, pgs. 2-3

Case Trucks

Freight Trucks

Rack Trucks

Industrial Trailers

Steel Frame Trucks

Drum Trucks

Dollies

Shelf Trucks

Box Trucks

Balance Type Floor Trucks

Dump Trucks

Wagon Trucks

Barrel Drain Racks

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THOMAS
MAKES 1000 DIFFERENT TRUCKS
Write for complete catalog and price list

THOMAS TRUCK & CASTER CO.

354 MISSISSIPPI RIVER
KEOKUK, IOWA

When inquiring check CP 3652 on handy form, pgs. 2-3

MATERIAL HANDLING

Serviceable as flat pallet, materials handling box or stake pallet . . .

carrying capacity of all-welded steel unit is 4000 lb; tiering capacity is 16,000 lb

Uses: For stacking, loading, and general materials handling requirements.

Features: All steel unit can be used as flat pallet or as a four, three or two-sided materials handling box. It may be used as pallet with stakes for handling and transporting angle iron and similar long items.

Description: Erect-A-Pallet is composed of three sections: 1) heavy duty, 8-way-entry pallet for fork or lift truck use, 2) four strong corner stakes, and 3) sides

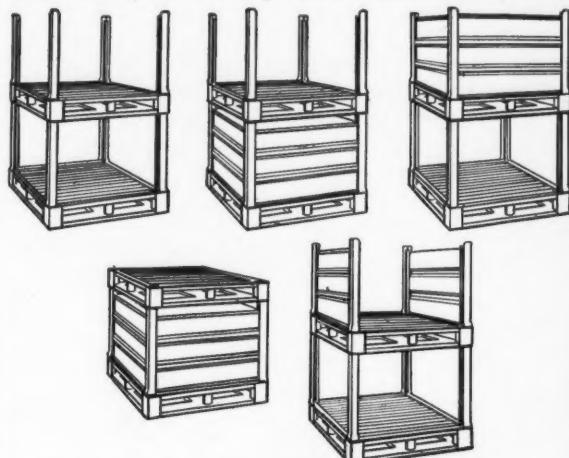


Illustration shows various assemblies possible with all steel constructed pallet

of heavy gage corrugated steel, which slide into corner stakes. Pallet is composed of strong cross sections, with the deck made of corrugated steel for maximum rigidity with minimum weight.

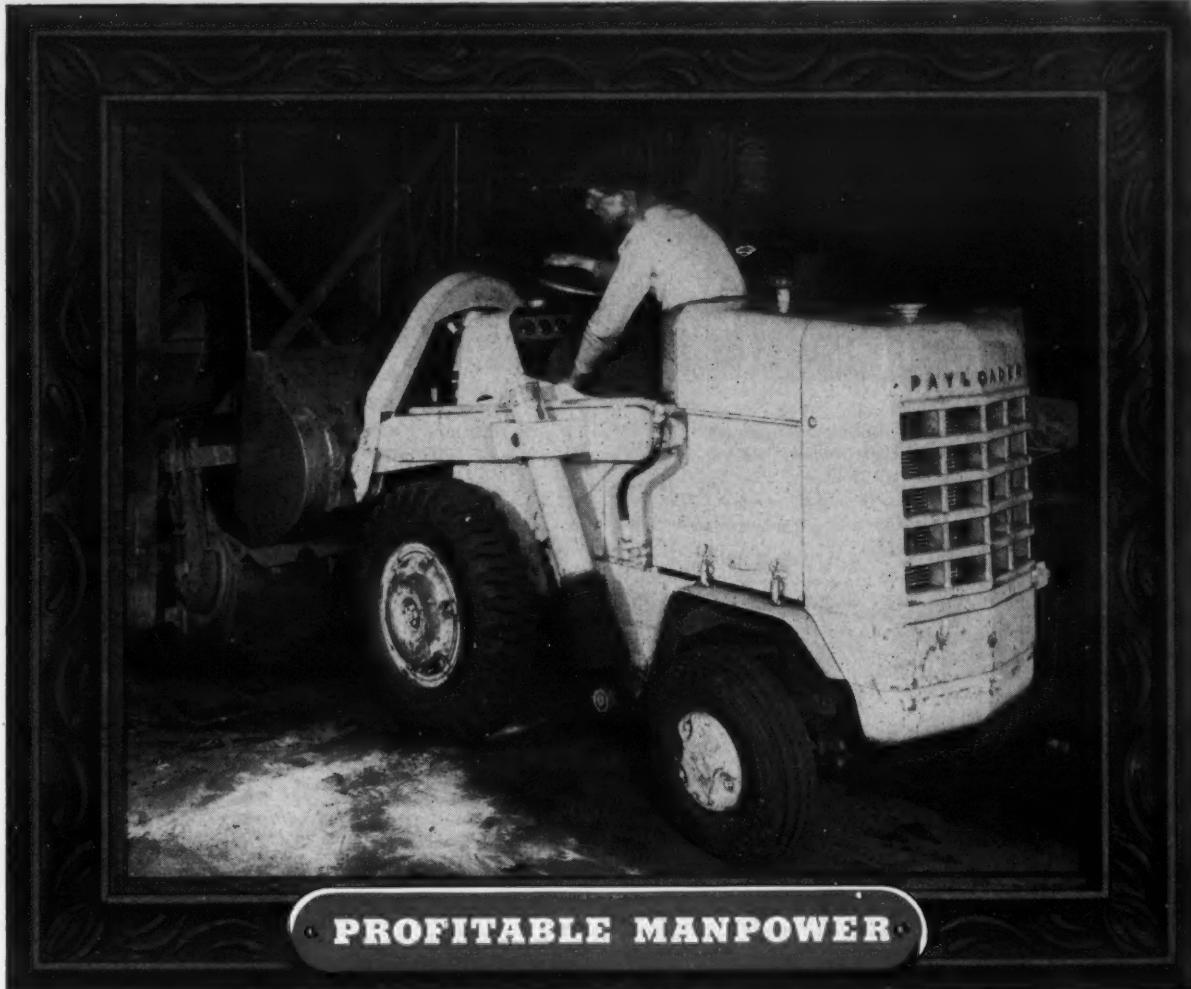
Carrying capacity of unit is 4000 lb; tiering capacity is 16,000 lb. Two sizes available are 40x48" and 48x40". It is reported to be easily assembled or dismantled by one man.

(Product of Phillips Mine & Mill Supply Company, Dept. CP, 2339 Jane St., Pittsburgh 3, Pa. . . or for more information check CP 3653 on handy form, pages 2 and 3.)

Steel container directory of manufacturers

Geographical listing of manufacturers who produce 90% of all steel shipping containers in the US is provided in 36-page directory. Plant locations and types of containers manufactured are itemized. Booklet includes factual data on annual production of various types of containers and tells how they are utilized by industry.

Directory closes with brief history of steel container industry. It also highlights research and development program being carried out in cooperation with civilian and military branches of government. Among recent developments of this program is the protective coating-liner, Synthetasine 100. "Directory 1952-1953" is issued by Steel Shipping Container Institute, Inc., Dept. CP, 600 Fifth Ave., New York 20, N. Y. When inquiring specify CP 3654 on handy form, pages 2 and 3.



• PROFITABLE MANPOWER •

This man may have been good with a wheelbarrow and hand shovel, but his productive capacity is several times greater as a "PAYLOADER" pilot. He's happier and so is his boss, because they both make more money.

"PAYLOADER" tractor-shovels are helping hundreds of plants slash the cost of moving bulk or loose materials of all kinds. They actually pay for themselves in a few months doing the many jobs listed here and doing them faster and cheaper. They also release manpower for more productive work.

These special tractor-shovels are available in seven sizes, from 12 cu. ft. to 1½ cu. yd. to master your jobs both indoors and outdoors. Get full facts *now* on cost-cutting, time-saving, production-boosting "PAYLOADER". The Frank G. Hough Co., 744 Sunnyside Ave., Libertyville, Illinois.

FOR MANY JOBS. Unload box cars — dig and carry all kinds of bulk and loose materials — feed conveyors, hoppers, elevators, baggers — unload trucks — load box cars — carry bagged and baled materials — clean up aisles, gangways — maintain private roadways — handle coal, coke, ashes — stockpile coal and materials — remove snow — spot cars — lift, haul, push, pull.



IDEAS PAY
and "Industrial Handling" is full of profitable ideas developed by "PAYLOADER" users. A request on your letterhead gets you on the regular mailing list without cost.

When inquiring check CP 3655 on handy form, pgs. 2-3

Better Production Lower Heating Costs:

after you install

HAUCK GAS BURNERS

Hauck Gas Burners are giving better firing results on calcining, heat treating, kiln, roasting, melting and drying furnaces; ovens; air heaters and boilers, with an outstanding record of performance.

Investigate how these burners can improve performance in your heating operations. Write for Catalogs.

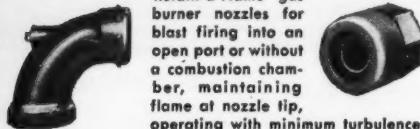
High-Pressure Gas-Air
Inspirators, provide accurate fuel-air ratio over a wide range of gas capacity by single valve operation.



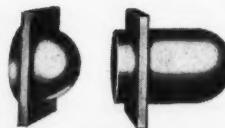
Low Pressure Air and Gas Proportional Mixers for single valve control, with constant air-gas ratio; ideal for automatic or manual operation.



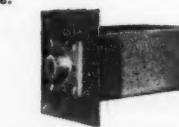
Retain-a-Flame gas burner nozzles for blast firing into an open port or without a combustion chamber, maintaining flame at nozzle tip, operating with minimum turbulence, producing a long, cylindrical flame; made in straight or elbow type.



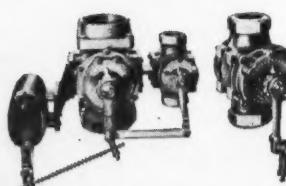
Sealed-in Gas
Burner Nozzles
for sealed-in
operation with
a refractory
firing tunnel.



Tunnel Burners, combining sealed-in gas burner nozzle, refractory combustion tunnel and flanged burner mounting box.



Adjustable Flow Valves for gas or air; flow rate easily adjusted to suit any constants in pressure, suction or discharge at any capacity; may be used singly, dual or in multiple interlocked arrangements for automatic, proportioned flow control; available in straight-thru and angle type.



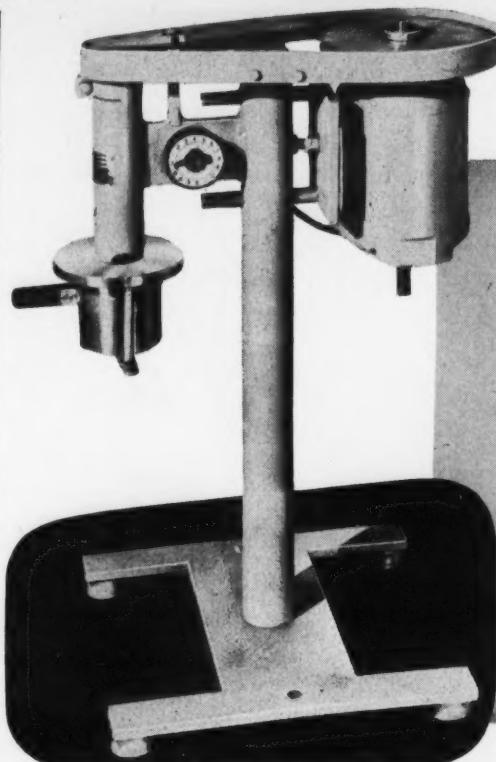
HAUCK MANUFACTURING CO.

Combustion Engineers • Manufacturers of Industrial
Gas and Oil Burning Equipment

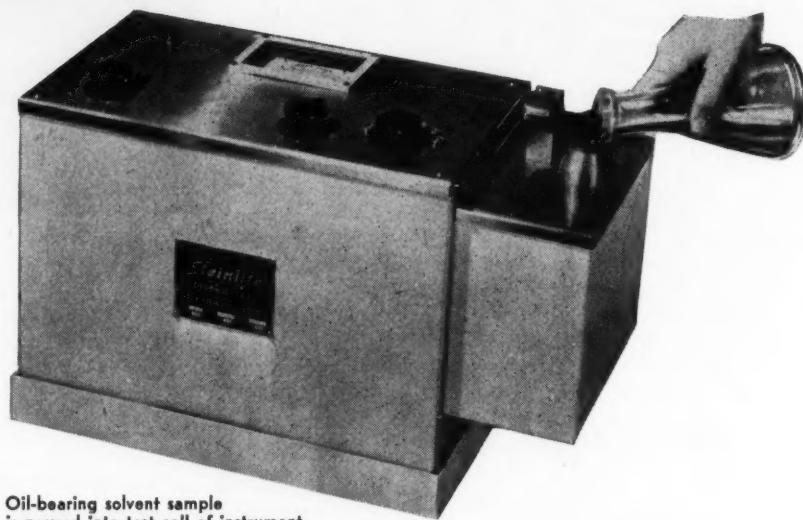
132-142 TENTH STREET • BROOKLYN 15, N. Y.

When inquiring check CP 3656 on handy form, pgs. 2-3

For the
Laboratory



Beans or meal are placed with solvent in the cup which can be seen hanging from right arm of the mill. Grinding and extraction takes about 3 to 6 minutes



Oil-bearing solvent sample
is poured into test cell of instrument

HIGH-FREQUENCY current is now being used to check oil content of soybeans or soybean meal in about 15 minutes. A test consists of mixing and blending a weighed sample with a definite volume of solvent. The resultant mixture is filtered and the filtrate is poured into a test cell. Meter reading obtained is then converted to oil content by using a conversion chart supplied with the instrument. This rapid method is significant because previous methods, including methods accepted as standard, are extremely slow. Results of a test are not available for several hours even when skilled personnel do the work. In running an actual test, a sample of about 100 grams is used. This may vary depending on basis chosen for test (100 grams preferred where moisture correction is applied.) Sample can be weighed out on an ordinary triple-beam balance. It is then placed in a metal container with a measured quantity of solvent. Container fits into a special mill which grinds the beans or meal, promotes extraction of the oil.

Milling time for whole beans is about 6 minutes. This figure is halved when a sample of meal is run.

In order to speed filtering, a Buechner funnel is recommended. Filtrate (oil-bearing solvent) is poured directly into a test cell of the instrument. Here, it forms the

Obviously valuable to extractors, this technique may even change bean-buying practice by allowing quick checks at time of purchase

dielectric material in a test cell made of two concentric metal cylinders. Since soybean oil has a relatively low dielectric constant, the amount of it present in the solvent effectively governs electrical capacity of the cell. This capacity changes the frequency of the circuit, which in turn is indicated on the meter.

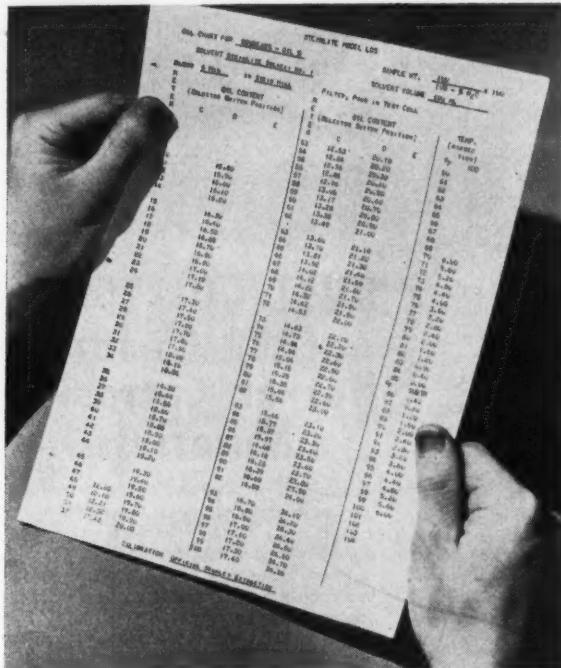
A reading is made by switching the instrument through progressively more sensitive ranges until needle swings out to some point on the 100-division meter scale. After noting this reading, operator lifts center electrode of the cell and as solvent drains, its temperature is noted on a second scale of the meter.

To obtain oil content, meter reading is converted directly into per cent oil on a curve or chart which is furnished. Temperature correction involves only a simple addition or

subtraction (base temperature: 85°F). Usual mathematical corrections may be also applied for dry basis, or the accepted 14% moisture basis.

Although electronic testing has been only recently announced by the Department of Agriculture, it is current practice at a number of extraction plants. As a simple routine test, this short-cut method can be handled by unskilled personnel . . . two workers can make 20 to 30 determinations an hour.

Extractors are using these tests to check in-bound beans, sort out high oil-content lots for processing, and put low oil beans aside for resale. Checks of meal-in-process, on the other hand, reveal when the best stopping point has been reached during extraction.



Oil Content vs Meter Reading tabulation is furnished

Other oil-seeds will undoubtedly yield to this technique in the future, but at present, it is recommended for soy beans. (This method and commercial equipment for carrying it out have been developed by Fred Stein Laboratories in conjunction with Seedburo Equipment Co., Dept. CP, 618 W. Jackson Blvd., Chicago 6, Ill. . . or for more information check 3657 on handy form, pages 2 and 3.)

Details equipment for standard sulfur combustion tests

Illustrated with photographs and drawings, this four-page publication details equipment needed for running bomb determinations of sulfur, chlorine, and other elements. Equipment described is standard for several ASTM, ASA, and API methods.

Principle of operation is the familiar burning of sample material in a confined space under pressurized oxygen. Bomb in question has a 360 ml capacity. General description also lists and describes individual parts. Following sections cover specifications, operating procedure, etc.

Specification #1900 is issued by Parr Instrument Co., Dept. CP, 211 53rd St., Moline, Ill. When inquiring specify CP 3658 on handy form, pages 2 and 3.

TYGON

Versus NH₄OH

AMMONIUM HYDROXIDE, ammonium salts, ammonia liquors and ammonia gas have many uses. They likewise have many opportunities to cause considerable damage to plants and equipment. However, maximum use with minimum corrosion can be made of ammonia and its various compounds through the proper use of the versatile TYGON in its several forms.

The TYGON family of plastic compounds consists of a series of selected polyvinyl resins which are skillfully modified with other materials to exhibit the maximum in chemical resistance and general physical properties. In its various forms, TYGON finds many uses in many plants in many industries.

As a calendered or press-polished sheet, TYGON is primarily used as a lining or covering in equipment such as tanks, towers, reactors, vats, drums, hoppers, bins, blowers, impellers, fume hoods and fume ducts. Large amounts are also die-cut into gaskets for use as positive, enduring seals in all types of process equipment.

In the form of sheeting, TYGON resists all concentrations of ammonium hydroxide at temperatures ranging up to 160°F. When subject only to ammonia fumes, the temperature limit can be raised to about 200°F. Higher service temperatures are possible with a corrosion-resistant brick sheathing over the TYGON lining. On prolonged exposure to ammonium hydroxide, TYGON exhibits a slight hardening and change in color. However, its protectability is unaffected.

When used as gasketing, TYGON has the same resistance to NH₄OH as it does in sheet form. Temperature limits are higher with the maximum depending on the size, design, and manner of use of the gasket.

As an extrusion, TYGON is most widely used as tubing or piping. However, extruded solid cord, or channel, are also used as a gasketing, expansion jointing, or packing. In these forms, TYGON resists ammonium hydroxide in any concentration and at temperatures up to 160°F. A slight stiffening and color change in the extruded TYGON may be noted with prolonged contact, but this does not affect its resistance.

TYGON Tubing has proved its worth in many laboratory and plant uses. Its glass-like clarity, full flexibility, smooth surfaces, light weight, high strength and long life make TYGON ideally suited to the fast, simple, safe transmission of virtually any liquid, gas, or semi-solid. The larger sizes, up to 2" ID, can be used to advantage as temporary or permanent transfer lines, as flexible connections and line desurgers, as siphon hoses, as oil and compressed air lines, and as inlet and outlet ports on pumps and filters. For pressure applications exceeding a constant head of 40 psi, particularly at elevated temperatures, braided jacket reinforcement is available and suggested.

As molded goods, TYGON exhibits the same resistance to NH₄OH as the extruded form. Specific pressure and temperature limits depend on the size and design of the piece. Typical molded TYGON items include gaskets, grommets, washers, closures, handles, bumpers and many other parts and fittings.

As a paint, TYGON usually sees service as a protective maintenance coating. As such the physical limits of a thin film must be realized. TYGON Paint protects plant and equipment against the fumes, spillage, or condensate of ammonium hydroxide in any concentration and at temperatures as high as 200°F. Prolonged immersion, however, is not advised without the counsel of U. S. Stoneware engineers. For mild environments a primer and no less than two top coats should be used. For severe exposures a minimum of five coats plus primer is advised.

As a plastisol (TYGOFLEX), TYGON finds use as a heavy duty coating and in the casting or "slush" molding of flexible parts and fittings. It resists NH₄OH in all concentrations. Temperature limits depend on the thickness of the coating deposited.

In any of its forms, TYGON is low cost insurance against the attack of not only ammonium hydroxide and related chemicals, but a wide range of other alkalies, acids, oils, greases, and water. For best results with TYGON, consultation with U. S. Stoneware engineers is recommended.



In addition to TYGON in its various forms, we also manufacture a number of other materials capable of handling ammonium hydroxide in any concentration and under all types of operating conditions. These products include chemical stoneware and porcelain acid proof brick and cements, homogeneous lead linings, and other organic linings and coatings.

Why don't you submit your corrosion problem today? There's no obligation and we'll be pleased to be of assistance. So write, now!

470C

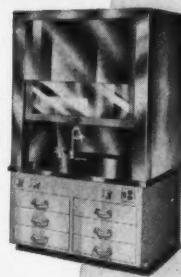
THE UNITED STATES STONEWARE CO., Akron 9, Ohio
ENGINEERS, MANUFACTURERS, ERECTORS OF CORROSION-RESISTANT EQUIPMENT SINCE 1865

When inquiring check CP 3659 on handy form, pgs. 2-3

for your New Laboratory or...
for Expansion

METALAB offers you the Finest in LABORATORY EQUIPMENT

WITHIN YOUR BUDGET



Let Metalab advise you on

- How to plan your Laboratory for greater efficiency.
- How Interchangeable Sectional Units are used.
- How to get the most for your laboratory budget.

Our new modern plant is geared to give you the close cooperation and rapid service you require.

Rush your problems to us today!

Write for our complete catalog on Laboratory Furniture and Equipment.

SECTIONAL

LABORATORY FURNITURE
and EQUIPMENT by

METALAB
Equipment Corp.

230 Duffy Ave., Hicksville, L. I., N. Y.

When inquiring check CP 3660 on handy form, pgs. 2-3

WANT FAST
CONTROLLED
UNIFORM DRYING?

CROSS-FLOW CIRCULATION DOES IT In GEHNRICH OVENS

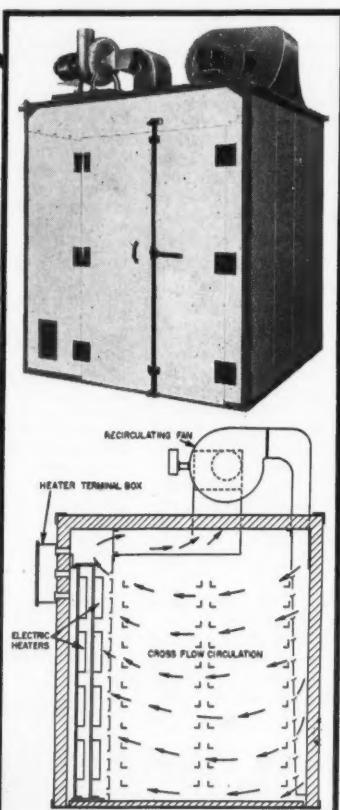
The oven shown is electrically heated, with complete control of high speed air recirculation, ventilation, temperature and operating safety. It dries, evaporates or cures 22-24" x 46" trays of process materials.

Gehnrich electric, gas or steam ovens in bench, cabinet or truck types, are made in many standard sizes; special batch or conveyor types are built to your requirements.

Write for Catalogs.

W. S. ROCKWELL COMPANY
220 ELIOT ST. • FAIRFIELD, CONN.

When inquiring check CP 3661 on handy form, pgs. 2-3



FOR THE LABORATORY

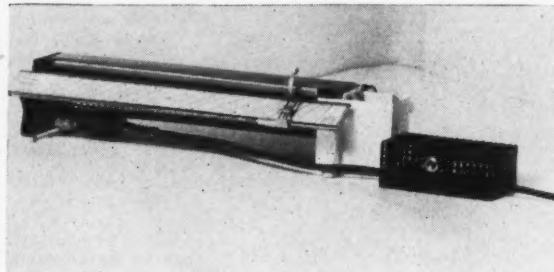
If a change takes place between 10 and 230°C, this hot bench shows it quickly...

gives temperature reading for melting points, decomposition, sublimation, etc

Uses: Primarily used for melting points of waxes, oils, greases, fats, resins, etc, but it serves equally well for determination of decomposition, sublimation, and loss of crystal water within its range. Volatility and purity can also be estimated with it.

Features: Melting point determinations are reported to take only a few seconds.

Description: "Lo-Temp" Hot Bench is similar to an earlier model except that it has a lower temperature



Accurate to about 1°C

span. Designed for temperatures between 10 and 230°C, the instrument has an accuracy of about plus or minus one degree Centigrade.

Body is 1 1/2 inches wide and 14 1/2 inches long. Temperature gradient is obtained by heating part of the stage and cooling another part. Melting points, etc, are determined by laying a sample directly on the chromed plated surface.

(Manufactured in Vienna by C. Reichert Optical Works; distributed in USA by William J. Hacker & Co., Inc., Dept. CP, 82 Beaver St., New York 5, N. Y. . . or for more information check CP 3662 on handy form, pages 2 and 3.)

Detect trace amounts of thorium . . .

reagent good for gravimetric and spectrophotometric determinations

Uses: Found to be an extremely sensitive reagent for the determination of microgram quantities of thorium, either gravimetrically or spectrophotometrically.

Features: In the gravimetric method, advantage is taken of the fact that thorium forms a specific strawberry-red precipitate in the presence of hydrochloric acid. By using a visual spot test technique, it is reported that one microgram of thorium per milliliter of solution can be detected.

The recently developed spectrophotometric method enables the determination of thorium in the range of 5 to 80 micrograms per 10 milliliters of final solution.

Description: Thoron [1-(o-arsenophenylazo)-2-naphthol-3, 6-disulfonic acid] is the name this manufacturer applies to his thorium reagent. It is a bright red crystalline product containing 12.9-13.1% arsenic in the disodium salt. A qualitative method of thorium determination can be successfully used in the presence of uranium and the rare earth metals, provided the concentration of these does not exceed 1000 micrograms.



FEON

DUST COLLECTOR FABRICS for Hot or Corrosive Materials

Hot acid fumes up to 300°F, chlorine, and smelter exhausts are just a few of the materials that are handled by these new FEON Orlon fabrics. Long life, because of high strength and chemical resistance, gives remarkable savings in "tough" dust collecting application.

Other FEON fabrics are equally thrifty. One user reduced cloth costs over 50% . . . merely by switching to FEON Dynel.



FOR ANY TYPE OF EQUIPMENT
FEON weaves to handle any size or type of dust particles are available as yard goods, or fabricated into elements for any type of equipment. On any tough dust collecting or filtering job—switch to FEON and save.



FILTRATION FABRICS DIVISION

FILTRATION ENGINEERS, INC.

155 Oraton St., Newark 4, N. J.

When inquiring check CP 3663
on handy form, pgs. 2-3

CHEMICAL PROCESSING

PUMPING UNDER VACUUM

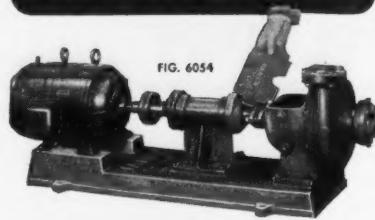


FIG. 6054

NO LEAKAGE THRU STUFFING BOX IN THE HANDLING OF CHEMICAL SOLUTIONS

When in vacuum service on evaporators, the Taber drip chamber prevents air from entering thru the packing. The illustration above indicates how this is accomplished.

• Water-sealing of the stuffing box is absolutely dependable. Many of the

foremost companies in the chemical and processing industries rely on adaptable, efficient Taber Single Suction Centrifugal Pumps. Built in any metal or alloy obtainable as specified by customer. • Please use your business stationery when writing for BULLETIN CL-339.

TABER PUMP CO. (Est. 1859)
320 Elm St., Buffalo 3, N. Y.

K-762

TABER PUMPS

HIGHER PRACTICAL PERFORMANCE

When inquiring check CP 3664
on handy form, pgs. 2-3

JULY, 1952

FOR THE LABORATORY

Iron interference is minimized by keeping it in the ferrous form.

The spectrophotometric method briefly consists of 1) adjustment of the pH of the thorium solution, 2) addition of Thoron reagent, 3) dilution to a definite volume (10 ml), and 4) determination of optical density spectrophotometrically in comparison with a reference solution of reagent.

(Product of Fine Organics, Inc., Dept. CP, 211 East 19th Street, New York 3, N. Y. . . or for more information check CP 3665 on handy form, pages 2 & 3.)

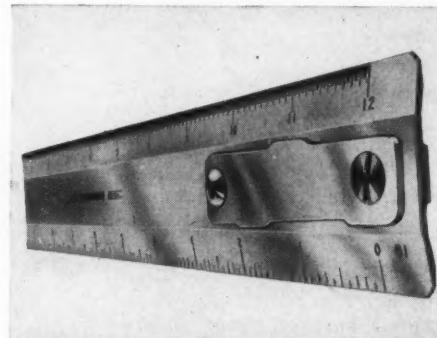
Higher accuracy, longer life results from stable, precise design of drafting scale . . .

variety of inch divisions makes possible quick selection, easy use of measurement scale in lab

Uses: Originally designed to assist engineers, draftsmen and architects by giving direct drawing reductions to scale, these scales can also be used in special applications in the laboratory.

Features: In twelve different rules, line includes such scales as 10, 20, 30, 40, 50, and 60 divisions to the inch as well as other graduations to facilitate choosing the right scale for the right job. Design features: 1) set back graduations to eliminate "file-teeth" action on pencil points, 2) high contrast, non-glare finish of the aluminum alloy material, 3) reduced face angle for easier reading, 4) a tapered, low-contact ruling edge for promoting accuracy in drawing or pointing off. Alloy will not warp, chip, crack, peel, or burn.

Description: Engine divided at 70°F to insure accurate graduations, Duraline drafting machine scales

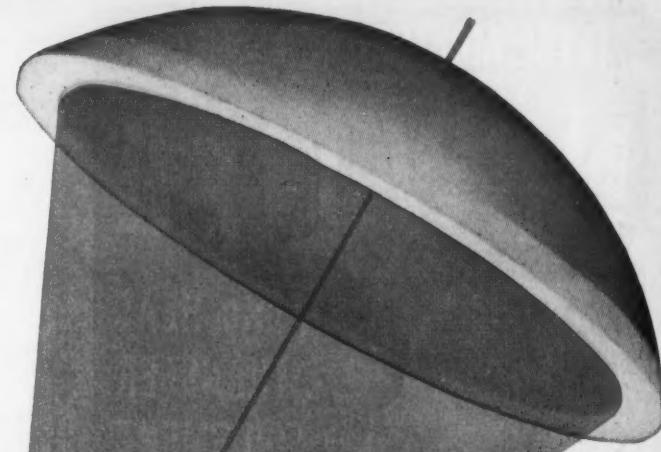


Shows scale of measurement quickly

have twelve standard types of graduations with each style available in 6, 12, 18, and 24" lengths. Scales are ground from solid aluminum flats and given an anodized finish to make the black lines and figures stand out.

Chucks permit their use on any standard drafting machine. Wide face permits larger number to be centered on lines for better reading and identification and a clear view over chuck arm of machine. Special coating has five times the resistance to grit and paper abrasion of usual platings. Being ground instead of stamped, the blank will not twist. Scales can also be supplied from boxwood material.

(Development of Universal Drafting Machine Corp., Dept. CP, 7960 Lorain Ave., Cleveland, Ohio . . . or for more information check CP 3666 on handy form, pages 2 and 3.)



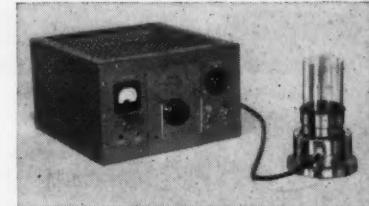
Focus ULTRASONIC energy on your problems with this new BRUSH research tool

Here is the key to a vast field of research in the use of ultrasonic energy for processing.

The new Brush Hypersonic® Equipment provides a complete and efficient unit for generating ultrasonic energy on a laboratory scale. Use of this versatile research tool can then be developed on a larger scale in the chemical, biological, and industrial research fields.

Higher power densities can be reached with Brush Hypersonic Equipment because the Brush-developed piezoelectric ceramic element is formed to concentrate its energy at a focal area. It provides intensities which otherwise are available only in very large apparatus.

Investigate this unique equipment for your research problems. For complete information on Hypersonic Equipment, write The Brush Development Company, Dept. KK-29, 3405 Perkins Avenue, Cleveland 14, Ohio.



APPLICATIONS

Published records describe application of ultrasonic energy in many fields that promise to:
Emulsify oil-soluble and water-soluble liquids
Accelerate aging of alcoholic spirits
Stimulate destruction of bacteria
Transform crystal structures
Vaporize liquids of all types
Degas liquids of various types
Emulsify mercury and water mixtures
Disperse metals in electrolysis production operations
Transform chemical compounds
Emulsify for smoother food products
Mix pigment and vehicle for paint
Homogenize milk and applicable liquids
Decompose gelatin or gum substances
Accelerate and stimulate germination of seeds
Disperse metallic elements in water, alcohol or oil
Produce stable photographic solutions
Oxidize water-soluble dyes

PUT IT IN WRITING WITH A BRUSH RECORDING ANALYZER . . .

THE *Brush* DEVELOPMENT COMPANY



Industrial & Research Instruments
Magnetic Recording
Acoustic Devices
Ultrasonics
Piezoelectric Crystals and Ceramics

When inquiring check CP 3667 on handy form, pgs. 2-3

Page 87

THESE AIRETOOL MIDGETS put

NEW LIFE

into HEAT TRANSFER EQUIPMENT



Single unit head with universal joint.



Brush type head.



Single unit head with cone cutter.



Drill head with universal joint.



Expanding blade type head with powerful Airetool motor.

SAFELY REMOVE DEPOSITS FROM
SMALL TUBES $\frac{1}{8}$ " TO 2" I. D.

Keeping condenser, heat exchanger and other small tubes free of scale and other deposits boosts production and adds to the life and usefulness of valuable equipment. These Airetool midget cleaners have been especially designed to safely and speedily remove all forms of deposits regardless of degree of hardness or shape of tube.

Powerful Airetool midget motors are air-driven and team up with the right cutter head for perfect results.

If your plant uses small tubes, keep them clean with Airetool midget cleaners. Down-time is less. Efficiency is benefited. For full details, write The Airetool Mfg. Co., 331 S. Center St., Springfield, O.



BRANCH OFFICES:
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Philadelphia,
Chicago,
Houston,
Tulsa,
Baton Rouge

REPRESENTATIVES IN ALL PRINCIPAL CITIES
There's an AIRETOOL Tube Cleaner and Tube Expander for Every Type of Tubular Construction.

When inquiring check CP 3668 on handy form, pgs. 2-3

Page 88

FOR THE LABORATORY

Research with sound waves is speeded with oscillator . . .

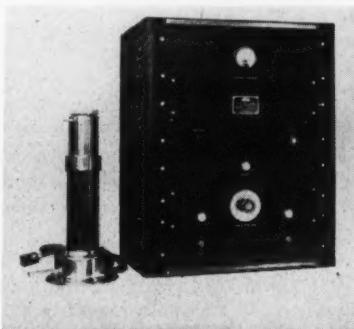
compact, powerful instrument has wide applications in chemical processing

A sonic oscillator for experimental work with sound waves and which speeds up test procedures for improved processing is at this time being offered to industry.

Compact and easy to operate, the oscillator consists of three parts: 1) an electronic driving element, 2) a hollow vibrator column, 3) a cup assembly. The size of each unit and the nesting of vibrator and cup assembly permit operation even on test tables where space is at a premium.

Magnetostriction oscillators are offered in two sizes. Smaller unit, operating at 9000 cycles, has a recommended capacity of 25 cc and delivers approximately 50 w to the magnetostriction rod. Larger unit has a capacity of 50 cc and delivers 200 w at a frequency of 10,000 cycles.

(Development of Raytheon Manufacturing Co., Dept. CP, Waltham 54, Mass. . . or for more information check CP 3669 on handy form, pages 2 and 3.)



Proves valuable in experimenting with sound waves

Temp of -40°C can be attained in three min with laboratory micro-freezing unit . . .

built-in filament permits rapid transference from low to higher temperatures

Uses: As a laboratory freezing apparatus. Specific examples of uses are for melting and freezing points, eutectic temperatures, and for observations of polymorphous and homomorphous phenomena. Testing of resins, oils, fats, and waxes are special fields of application.

Features: Extremely quick effective freezing is provided. It is possible to reach a temperature of -40°C from room temperature within three minutes. Lowest attainable temperature is -50°C to -55°C . Rapid transference may be made from low to higher temperatures with built-in filament winding. This also allows freezing stage to be used as a heating stage for temperatures up to 40°C .

Description: Freezing chamber is located in base of apparatus. Carbonic acid from a special container is introduced into chamber by means of a valve. Frosting is caused by expansion of carbonic acid. Chamber is fitted with wire mesh which supports solid formation of frost. Cooling speed can be regulated by adjusting valve.

Coatings of frost on outside of unit can be prevented by smearing surface with glycerine or by slipping a sponge rubber ring over object being cooled. Rubber ring contacts surface of unit, forming closed air space, thus obviating efflorescence.

Apparatus is fitted with attachment for microscope, speci-

FAST, UNIFORM HEAT

NO FLASH LOSS

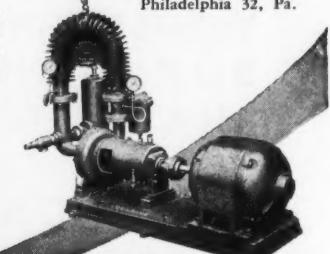
CONDENSATE RETURNED TO BOILERS AT HIGH TEMPERATURE AND HIGH PRESSURE

These results are obtainable through the installation of the Cochrane C-B System, a completely closed circuit, with a jet pump and a centrifugal pump incorporated in one, draining hot condensate from steam process equipment and returning it to the boiler at close-to-process temperature and at high pressure.

Savings in fuel, increase in production, improved quality are all immediately obtainable with the installation of the C-B System.

Cochrane Publication 3250 gives complete information on the C-B System. Write for your copy today.

COCHRANE CORPORATION
3162 N. 17th Street
Philadelphia 32, Pa.



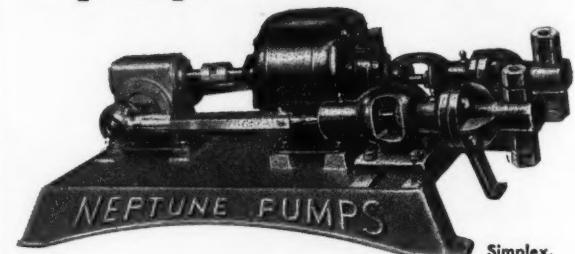
COCHRANE

C-B

OF CONDEN-
SATE DRAIN-
AGE CONTROL

When inquiring check CP 3670 on handy form, pgs. 2-3

It pumps . . . it PAYS!



Simplex,
duplex or
dual operation

SAVINGS are the first of many pleasing dividends paid by the *easy-working simplicity* of the new Neptune Chemical Proportioning Pump. Here is a modern, streamlined pump that is not costly . . . ready with finer feeding controls for boiler feed-water treatment. And the motor eliminates old "headaches" because it is easily serviced or replaced with standard parts that are readily available in any city; also, an available unused motor can be readily utilized and applied to the Neptune Drive. Write for interesting bulletin. Neptune Pump Mfg. Co., 4912 N. 6th St., Phila. 20, Pa.

Neptune PUMPS

for Chemical Proportioning

When inquiring check CP 3671 on handy form, pgs. 2-3

CHEMICAL PROCESSING

FOR THE LABORATORY

men slider, glass cover, and equipment for temperature measurement.

(Kofler Micro-Freezing Stage is available from William J. Hacker & Co., Inc., Dept. CP, 82 Beaver St., New York N. Y. . . or for more information check CP 3672 on handy form, pages 2 and 3.)

**Improves Karl Fischer technique,
runs moisture determination
quickly, automatically . . .**

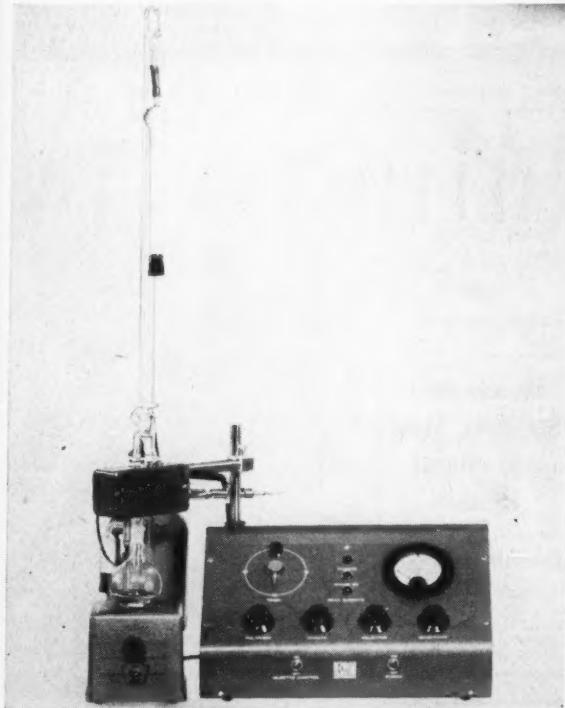
retains advantage of having no temperature, oxidation, or decomposition effects

Uses: Accurate determination of moisture content in samples which give unsatisfactory oven tests.

Features: Method is fast, takes only one or two minutes. An accuracy of 0.5% can be attained in most titrations.

Description: Aquameter employs Karl Fischer technique, eliminating errors caused by temperature, oxidation, and decomposition. Equipment is simpler than that used in distillation methods.

Basically, instrument consists of an electrically controlled titrating unit into which sample is introduced. After setting a knob on the control unit, instrument completes test without further attention by the operator. Unit runs



Moisture determinations are rapid and accurate

the titration to a dead stop (as recommended in the pharmacopoeia), eliminates need for tricky color judging by operator. Also, instrument permits successive determinations without resetting of the controls. Accuracy is independent of color, composition, or turbidity of the solution.

Aquameter requires 115v, 50 or 60 cps power.

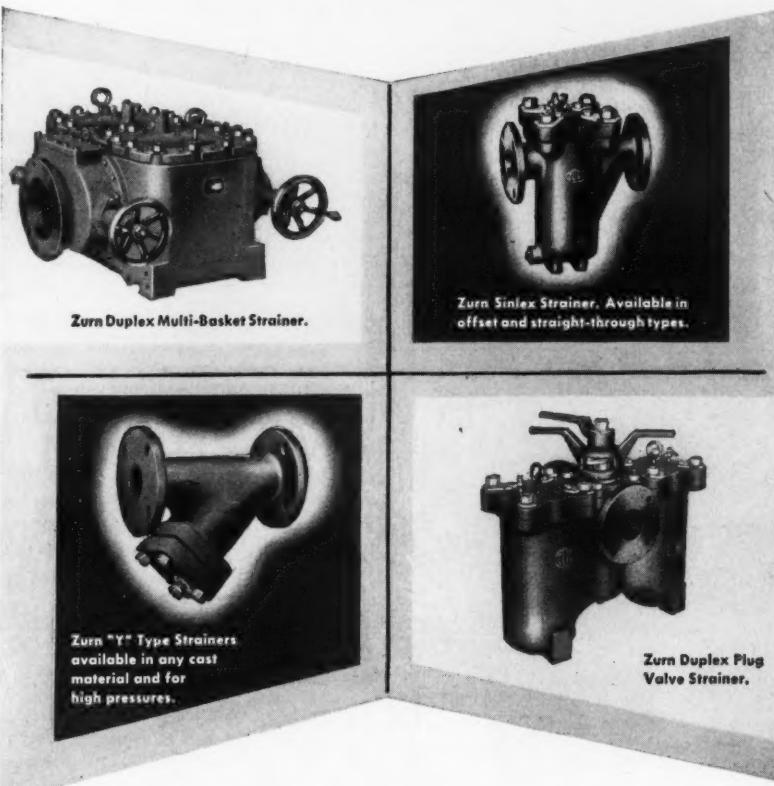
(Developed by Beckman Instruments, Inc., Dept. CP, South Pasadena, Calif. . . or for more information, check CP 3673 on handy form, pages 2 and 3.)



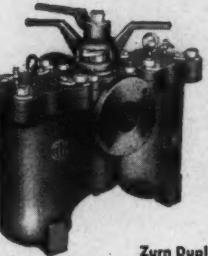
OUR 50th ANNIVERSARY

STRAINERS IMMEASURABLY IMPROVE THE HANDLING OF FLUIDS (WATER, OIL, CHEMICALS) THROUGH PIPE LINES

**These Strainers Permit HIGH Rates of Flow With Remarkably
LOW Pressure Drop From Input to Output**

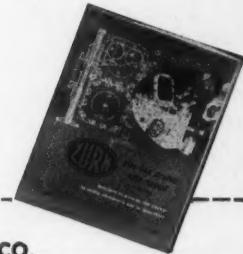


Zurn Sinlex Strainer. Available in offset and straight-through types.



Zurn Duplex Plug Valve Strainer.

**Write for Pipe Line
Strainer Manual No.
951, including pre-
viously unpublished
pressure drop data.**



Zurn Strainer applications include Municipal Water Systems, Process Industries, Ships, Power Stations, Industrial Plants and High Temperature Installations. Zurn Engineers are available for consultation on all fluid handling problems.

J. A. ZURN MFG. CO.

INDUSTRIAL DIVISION • ERIE, PA., U. S. A.
In Canada: Canadian Zurn Engineering Ltd., Montreal, P. Q.

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J. A. ZURN MFG. CO.
Industrial Division; Erie, Pa., U. S. A.
Please send me Pipe Line Strainer Manual No. 951

Name _____

Position _____

Company _____

Street _____

City _____ State _____

Please attach to your business letterhead—Dept. CP

When inquiring check CP 3674 on handy form pgs. 2-3

BIDDLE

Instrument News

HOW SAFE ARE YOUR GROUND CONNECTIONS?

Biddle Ground Tester measures low resistance

In spite of apparently good lightning rod or arrester protection, lightning frequently will cause severe damage if high ground resistance hampers its dissipation in the earth. Lightning storms are prevalent in the northeastern states during the spring and fall



months. Plants in this section should make a thorough round of ground resistance tests. Aside from the hazards to personnel, thousands of dollars may be saved in damage to electrical equipment and in loss of power and stoppage of production.

The MEGGER® Ground Tester is the easiest, quickest and most accurate method of determining ground resistance. It is an instrument specially designed for the purpose and should be used wherever possible. Direct readings are automatically obtained in ohms. It provides its own source of current—no batteries, or other remote source required. It's easy to carry, too. Has approval of the Associated Factory Mutual Insurance Companies.

Don't put it off—write today for "Grounding Electrical Circuits Effectively" by J.R. Eaton (Bulletin 25T2-CP) and our Biddle manual on "Ground Resistance Testing" (Bulletin 25J-CP).

HERE'S A "GOOD COMPANIONS" KIT FOR ELECTRICAL ENGINEERS IN CHEMICAL PLANTS

Men concerned with all-around-the-plant electrical tests and resistance measurements tell us that these are "indispensable" tools:



Midget Megger Electrical Insulation Tester for detecting dirt, moisture and deterioration in advance of failure, or as a trouble-shooter after failures occur.

The Midget Megger Circuit Testing Ohmmeter for measuring conductor resistance of coils, contacts and relays, and checking continuity of circuit and grounded parts.

Be sure to write for your copy of our new Bulletin 21-85-CP today.

JAMES G. BIDDLE CO.
1316 Arch St., Philadelphia 7, Pa.

Please mail me Bulletin 25T2-CP
 Bulletin 25J-CP Bulletin 21-85-CP.
 Thank you.

B741-R



FOR THE LABORATORY

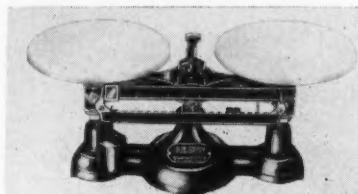
Self-aligning bearings make balance scale sensitive . . .

tare beam counterbalances container for quick net weight

Uses: For weighing of solutions and many other applications in research and industrial laboratories.

Features: Improved sensitivity is possible through self-aligning bearings that reduce friction, increase life of balance by assuring full contact with knife edges at all times. Tare beam counterbalances empty containers for quickly determining net weight of solutions.

Description: Heavy-duty solution balance (Model 119) has heavy cast iron base and rigid beam for sup-



Is sensitive, yet designed for heavy duty

porting heavy loads without deflection. Hardened steel check levers permit sensitivity of 1 gm under loads up to 20 kgm. Thumb-screw on tare poise permits locking for repetitive weighing.

(Development of Ohaus Scale Corporation, Dept. CP, 1050 Commerce Ave., Union, N. J. . . or for more information check CP 3676 on handy form, pages 2 and 3.)

Catalog of apparatus for laboratory

Sixteen-page booklet is digest of laboratory apparatus and equipment. Each item is illustrated and index permits quick location of desired piece of equipment.

Appropriate specifications according to size, capacity, and range are presented in tabular form. Descriptive material reviews operation of each unit and suggests applications.

Among listing of apparatus is thermometers, centrifuges, polyethylene funnels, and instruments for automatic moisture determinations, titrations, and recording pH. Cat 15 is issued by Scientific Glass Apparatus Co., Inc., Dept. CP, 100 Lakewood Terrace, Bloomfield, N. J. When inquiring specify CP 3677 on handy form, pages 2 and 3.

Check These 10 Advantages in TRENT Oil Heater Elements

1. Underwriters' approved.
2. Rated 3 to 16 K. W.
3. Voltage 115 - 550 - 3 Phase.
4. Low Watt Density.
5. Minimum Carbonization.
6. Low Maintenance.
7. Designed for 300 lb. pressure.
8. Heavy duty terminals and terminal box.
9. Extra heavy flange or screw thread.
10. Temperature range up to 600°F.



ABOVE: HAUCK ELECTRIC OIL PREHEATER, Hauck Mfg. Co., Brooklyn, N. Y. Heat source is TRENT Fin Tube Heating Element.



LEFT: TRENT Fin Tube Heating Element for flange instead of threaded connection. Also made in plain tube and blade styles.



When inquiring check CP 3678 on handy form, pgs. 2-3

VALUE!

Your first order
will
convince you!

"Metalsmiths" Stainless Steel and Monel Utensils

Prompt shipment
—anywhere!

We've shipped "Metalsmiths" corrosion-resistant utensils all over the world for more than 30 years, with utmost satisfaction. Highest quality materials and workmanship assure long wear. All items shown, plus beakers, stock pots, batch cans and shovels, in stock. Buy, try, compare!



WRITE FOR LATEST CATALOG — PRICE LIST



METALSMITHS

Division of Orange Roller Bearing Co., Inc.
556 White Street Orange, N. J.

When inquiring check CP 3679 on handy form, pgs. 2-3

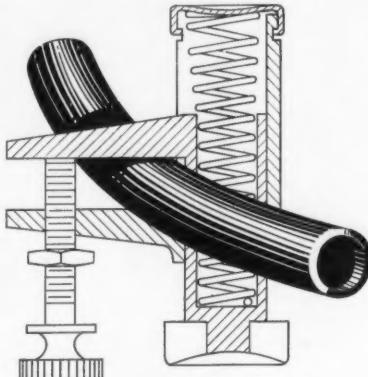
CHEMICAL PROCESSING

When inquiring check CP 3675 on handy form, pgs. 2-3

FOR THE LABORATORY

Adjustable flow control requires only rubber tube and pinchcock . . .

can be applied without disconnecting tube and it holds settings previously made



Sectional drawing shows pinchcock construction

Uses: Controlling flow in rubber and other flexible tubing up to $\frac{3}{8}$ -inch diameter.

Features: Adjustable to any setting, pinchcock may be applied or removed without the disconnection of tubing.

Description: Vari Flow Pinchcock is a modification of manufacturer's standard type. Major

difference is a nickel-plated brass attachment by which a set screw controls the movable jaw. Operator can select maximum flow he will get in laboratory tubing. Furthermore, once set, the pinchcock can be removed and reattached without disturbing setting. Another advantage is that even while set for a low flow rate, pinchcock may be opened wide for flushing lines without losing its setting.

Made of non-rusting alloy, pinchcock is designed with broad jaws in order that cutting effect on soft tubing is minimized.

(Fisher Scientific Company, Dept. CP, 717 Forbes St., Pittsburgh 19, Pa. is the maker . . . or for more information check CP 3680 on handy form, pages 2 and 3.)

Gage stand assists in precise film thickness tests

Four-page bulletin reports on recently developed gage stand, which helps in making precise determinations of film thickness with gage. Instrument is used for measurement of thickness of protective coatings on metal or for unsupported films of plastic or paper. It is of penetrating needle type. An electrical connection is secured between gage and metal base on which material is being measured.

Indicator light shows when film has been penetrated. Distance needle has traveled is direct measure of thickness.

Gage stand insures that needle is held in vertical position. Close control of pressure against coating is provided by use of stand. It also aids in overcoming difficulty experienced in past in determining thickness of very hard films. Stand is constructed of aluminum and chromium plated steel, supported on wood base 5" by 12". Height of gage columns on stand is 7½".

Another attachment permits measurement of hardness. Gage itself is self-contained, requiring no outside source of power. It is fabricated from aluminum. Measurements may be made from range of 0.001" (1 mil) up to 1". Gage, stand, or hardness attachment may each be obtained separately.

Bulletin No. 110 is issued by Gardner Laboratory, Inc., Dept. CP, Bethesda 14, Maryland. When inquiring specify CP 3681 on handy form, pages 2 and 3.



TF

WeldELLS®

...have set their own standards

Many of the largest users of Welding fittings refuse to accept any other fittings than WeldELLS.

They have found that when the name, WeldELL, is stamped into a fitting, that fitting can be accepted without question for any service for which it is designed.

They have found that WeldELLS have features that please both the men who design and the men who erect welded piping . . . features that were pioneered by Taylor Forge . . . features that are combined in no other welding fittings.

They have found the answer to their every need in the greater range of sizes, weights and types of the WeldELL line . . . in the broader scope of materials.

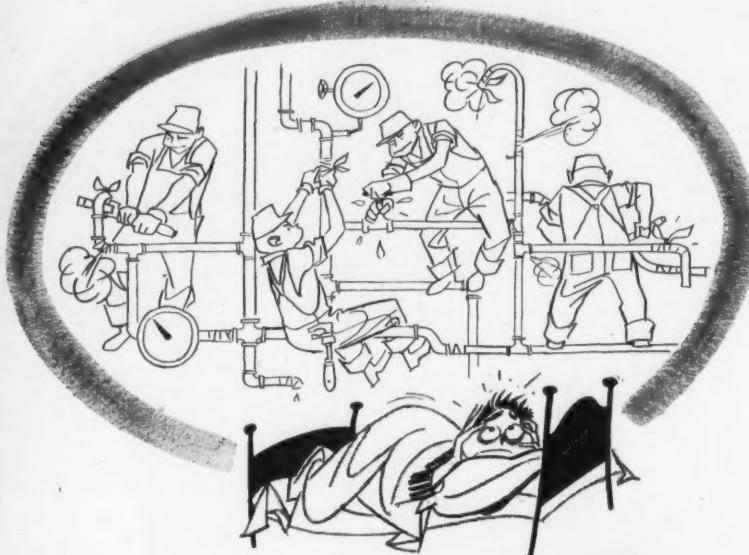
For up-to-the-minute facts see
your Taylor Forge Distributor.

TAYLOR FORGE

TAYLOR FORGE & PIPE WORKS, General Offices and Works: P.O. Box 485, Chicago 90, Ill.
Offices in all principal cities. Plants at: Carnegie, Pa.; Fontana, Calif.; Hamilton, Ont., Canada

When inquiring check CP 3682 on handy form, pgs. 2-3

Say goodbye to nightmares about pipe repairs and replacements!



Install corrosion-resistant saran lined steel pipe wherever you are piping chemicals and solvents. Because saran is extremely resistant to most chemicals and solvents, such installations will give dependable, long-term service and reduce shut-downs due to pipe repairs and replacements. In addition to minimum maintenance cost saran lined steel pipe brings you another important advantage: it is easily field fabricated. No intricate tools required, no waiting for special fabrication, no costly delays. *Saran lined steel pipe is manufactured by The Dow Chemical Company.*

Write to the Distributor:

SARAN LINED PIPE COMPANY

2415 BURDETTE AVENUE • FERNDALE, MICHIGAN

Offices in New York • Boston • Pittsburgh • Tulsa
Philadelphia • Chicago • Portland • Indianapolis • San
Francisco • Houston • Denver • Los Angeles • Seattle
Cleveland • Charleston, S. C. • Toronto • Montreal

clip and send today!

Saran Lined Pipe Company,
2415 Burdette Avenue, Ferndale, Michigan
Please send me a copy of your catalog on
Saran Lined Pipe, Valves and Fittings.

Name _____ Title _____
Company _____
Address _____
City _____ State _____
501



RELATED PRODUCTS

Saran rubber tank lining—an outstanding lining where resistance to grease, many solvents, acids and other chemicals is indicated.

Saran rubber molded parts—stoppers, diaphragms, various-sized moldings for valves, instruments, etc.



When inquiring check CP 3683 on handy form, pgs. 2-3

FOR THE LABORATORY

Sample measurements made quickly, accurately, and give more data . . .

automatic timer stops when predetermined count has been completed by electronic unit

Uses: For counting purposes when working with radio-active substances.

Features: Data obtained faster, more accurately, and more reproducible with electronic unit. Aural monitor signals end of a counting run, thereby making it possible for laboratory personnel to perform other work during that period. Timer stops automatically when predetermined run is completed.

Description: Autoscaler has a completely electronic scaling circuit of 12 scales-of-two, and is designed so that any predetermined count corresponding to the powers of two from 4 to 4096 may be selected. Panel-



Electronic scaling unit has built-in automatic timer

mounted neon lights indicate progress of the count and elapsed time is shown on the odometer-type timer which reads to 999.99 min and with an accuracy of 0.01 min. Aural monitor indicates arrival of each pulse by means of a sharp click.

Other features include automatic resetting of the scales when the count stops, a coincidence loss of less than 0.8 per cent for up to 100,000 random pulses per min, a resolving time of 5 microseconds, and a stop button to interrupt the count at will. A shielded high voltage power supply is provided that is electronically regulated so that 1 per cent change in the line voltage will cause only 0.01 per cent change in high voltage. High voltage is continuously adjustable from 300-2500 v by means of a multiturn potentiometer.

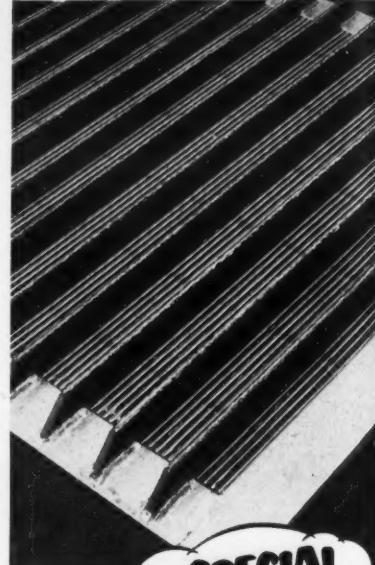
(Development of Tracerlab, Inc., Dept. CP, 130 High St., Boston 10, Mass. . . or for more information check CP 3684 on handy form, pages 2 and 3.)

Versatile table satisfies lab need for 30 x 48 inches additional working space . . .

eight different methods of installation are possible to fit physical layout of lab

Uses: For microscope and other instrument work in the laboratory which requires either standing or sitting position.

Features: As many as eight different methods of installation are possible to suit existing or proposed physical layout of laboratory. Compact Versa-Table



got a SPECIAL screening job?

BEE-ZEE

CAN FILL THE BILL!

Screen above is a stationary sluice screen built to dewater 18" coal. $\frac{1}{4} \times 1"$ hard surface guard rails keep abrasive weight of the heavy coal raised off screening surface without decreasing efficiency.

ANY SIZE . . . ANY SHAPE . . . ANY JOB

Bee Zee Screens are designed and built to meet your particular screening need. If you have a screening problem—or think your screening efficiency could be improved—we'll gladly make recommendations or build to your specifications. Write. No obligation.

All Bee Zee Screens are of exclusive round rod design. Non-blinding. Longer life with unimpaired screening accuracy. Quickly, easily installed.

WRITE FOR LITERATURE

BIXBY-ZIMMER
Engineering Co.

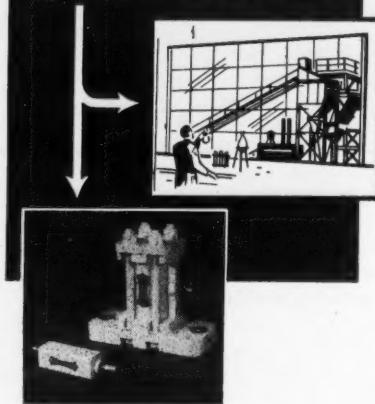
740 ABINGDON STREET, GALESBURG, ILLINOIS

BEE-ZEE SCREENS CAN BE FITTED TO ANY SCREENING EQUIPMENT

When inquiring check CP 3685 on handy form, pgs. 2-3

CHEMICAL PROCESSING

Ever try
Air Vibration
to move
"Stuck" materials?



Dry chemical materials handled in bins, hoppers, chutes, storage tanks, screens, etc., will get stubborn sooner or later.

Chemical people are using the CLEVELAND Air-Cushioned Type Air Vibrator to keep them moving, either continuously or on an intermittent basis.

Simple to install. Low initial cost. Quiet operation.

Backed by 27 years experience. A complete range of piston diameter sizes and mountings is available.

THE CLEVELAND VIBRATOR COMPANY
2706 Clinton Ave. • Cleveland 13, Ohio

Send your Catalog 108 and Hopper Data Sheet.

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Company _____

Street _____

City _____

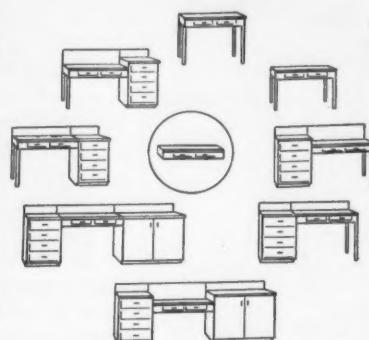
State _____



2706 Clinton Ave. • Cleveland 13, Ohio

When inquiring check CP 3686 on handy form, pgs. 2-3

FOR THE LABORATORY



Circled item is laboratory table; around it 8 possible assemblies

will meet any laboratory's needs for 30 x 48 inches of additional and unobstructed working space.

Description:
Table can be placed in position at either end of furniture.

It can be positioned at either of two heights through use of single pair of 30 or 36 inch legs at the open end. Table may also be supported between two separate pieces of furniture.

Upper section of table is constructed of heavy gauge steel which can be topped with stainless steel, Kemrock or Formica bonded to heavy plywood sections. Furniture is available with two drawers and reagent shelves.

(Product of Fisher Scientific Co., Dept. CP 717 Forbes St., Pittsburgh 19, Pa. . . . or for more information check CP 3687 on handy form, pages 2 and 3.)

**Explores conditions within flame
though it does not respond
to temperature changes . . .**

electrical signal in turbulent, ionized zone is the basis of measurement

The turbulent, ionized zones of a flame generate electrical signals in the audio frequency range. This fact has been used as the basis of an experimental instrument known as a Flamometer.

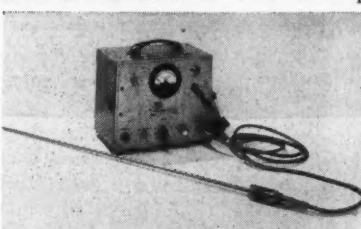
Sensitive probe of the instrument is a long metal rod tipped with ceramic. When probe is electrically connected to the unit proper, electrical signals can be detected, amplified, and indicated. Response time is on the order of a millisecond. This fast response is definitely not

a temperature response, nor is the instrument materially affected by temperature of the detecting tip. Signal from the probe is fed to an electronic amplifier with gain control which

permits using this device with several types of flame. Current instrument can produce any one of these four outputs: 1) meter reading on the Flamometer meter itself, 2) chart record with a 0 to 1 ma recorder, 3) oscilloscope observation, 4) control with relays or a servo-loop.

Probes have been designed to withstand a wide range of mechanical and thermal conditions. First two stages of the electronic amplifier are shock-mounted to hold microphones in line. The Flamometer will be useful aid in studying combustion and flame propagation, should be an interesting accessory tool in many related studies.

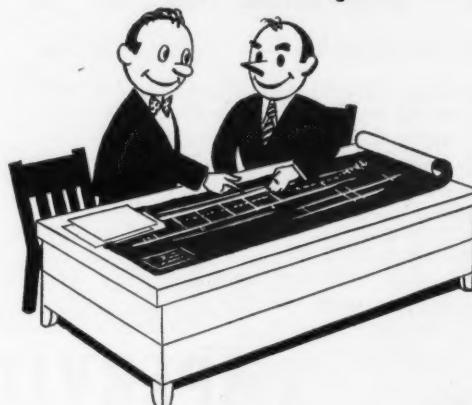
(Development of Instruments Div., Phillips Petroleum Co., Dept. CP, Bartlesville, Okla. . . . or for more information check CP 3688 on handy form, pages 2 and 3.)



Responds in about one millisecond

**TIPS ON SOLVING
DRYING PROBLEMS**

**JUST HOW DOES CONSULTING
PROCTOR ENGINEERS EARLY
PAY OFF ?**



Taking Proctor engineers into your confidence just as soon as you know that drying is to be a part of your processing line usually pays off in substantial savings—for you! It makes such plain common sense when you stop to think about it. When drying is a part of a process it is usually a vital link. As such, the equipment should be considered at the very outset of your planning. Its design is dependent upon a number of factors . . . the capacity desired and physical characteristics of the product being two of the chief considerations. Proctor engineers may recommend that to obtain a desired capacity, the product be delivered to the dryer in a certain state and this may govern the type of preliminary equipment needed. Then too, characteristics of the dried material may affect the type of subsequent equipment you will need. That is why it is advisable to consider the problem—as a whole and early! You save time, effort and money by consulting Proctor engineers early. Write today for Bulletin 361 for the complete story of the Proctor approach to solving drying problems. For a lucid explanation of Proctor Drying Systems for the Process Industries, ask for Bulletin 342 as well.

**A FEW TYPICAL MATERIALS
BEING DRIED IN
PROCTOR CONTINUOUS
CONVEYOR SYSTEMS**

Starch
Titanium Dioxide
Sulfa Drugs
Calcium carbonate
Magnesium carbonate
Clay
White Lead
Finished Lithopone
Soy Bean Protein
Lead Arsenate
Nitro Guanidine

PROCTOR CONTINUOUS CONVEYOR SYSTEMS

PROCTOR & SCHWARTZ INC • 633 TABOR ROAD • PHILADELPHIA 20 • PA.

When inquiring check CP 3689 on handy form, pgs. 2-3

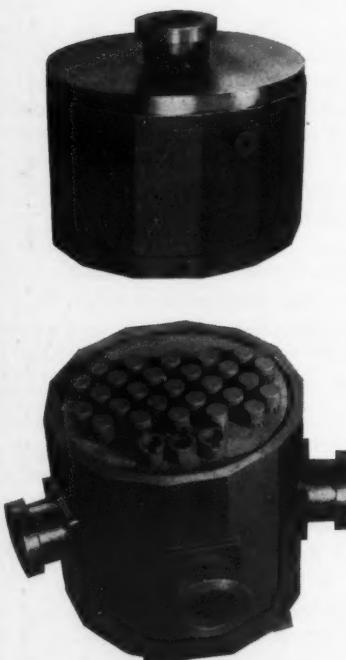
Permanently Impervious to HCl or Equivalents



IMPERVITE

HEAT EXCHANGERS — ABSORBERS

Even such a tough corrosive as Hydrochloric Acid will not break down the resistance of Impervite, made from graphite impregnated with special-formula resins developed exclusively by Falls Industries. Typical of the many types of heat exchangers made by Falls from Impervite is the 158-tube horizontal tube-and-shell unit shown above. Also: 7, 14, and 24-tube stock units or special designs up to 222 tubes. Impervite absorbers for processing gases from 40% to 100% HCl. Plate or immersion heaters to any capacity.



IMPERVITE TOWERS

for absorption, scrubbing, fractionation, extraction and related processing are made in five stock sizes with 12", 15", 18", 24" and 30" ID sections easily assembled to any suitable height. Sections up to 24" are monolithic cylinders machined from solid Impervite. Larger sizes are machined segments permanently cemented together. Typical 33" sections at left are top and base of special 36-foot tower.

PIPES, VALVES, FITTINGS
of Impervite, all with machine threads, are available in sizes from $1/2"$ to 10"ID.

At the CHICAGO SHOW: We'll display something REALLY NEW in a 25 gpm CHEMICALLY IMPERVIOUS PUMP!

Falls Industries, Inc.

AURORA ROAD - SOLON, OHIO

When inquiring check CP 3690 on handy form, pgs. 2-3

FOR THE LABORATORY

Simple rack of tubes spots viscosity in jig time . . .

method allows operator to compare time of bubble rise

Uses: For estimating viscosity of liquids from about 0.005 to well over 1000 Stokes.

Features: Operation is simple and fast. It can be handled by unskilled workers.

Description: Operation of Bubble Viscometer depends on the fact that the speed of a bubble rising through a liquid is controlled by the viscosity of that liquid. In order to use this principle, the test set-up equipment includes several standard liquids in hermetically sealed glass tubes. Time of bubble rise is checked, for any unknown liquid, by placing it in a similar glass tube. All tubes are locked in a rack and the rack is inverted.

Result is that, an instant later, bubbles have risen high in low viscosity fluid; have hardly risen at all in high viscosity fluids. Unknown sample's bubble can then be placed between the two liquids that bracket it. Since viscosity of these two standard samples is known, it is an easy matter to estimate viscosity for the unknown sample.

Test kits are available for 0.005 to 0.3 Stoke, 0.5 to 5.5, 6.2 to 148, 388 to well over 1000 Stokes.

(Products of Gardner Laboratory, Inc., Dept. CP, Bethesda 14, Md. . . . or for more information check CP 3691 on handy form, pages 2 and 3.)

News bulletin discusses infrared analyses

Applications and methods for infrared and other radiation type testing are discussed in 8-page quarterly publication.

One section illustrates in detail checking of essential oils in the perfume industry.

Principle of using electronic and optical "building blocks" to design an instrument for a particular problem is explained. One article gives directions for operation of one model of a spectrometer. Some uses of infrared as yet not fully exploited are listed.

Vol 3, No. 3 of "Instrument News" is issued by Perkin-Elmer Corp., Dept. CP, Norwalk, Conn. When inquiring specify CP 3692 on handy form, pages 2 and 3.

Thermo Electric Wires, for Thermocouples Extensions



ACCURATE because the thermo elements for all wires are carefully matched for accurate calibration.

DURABLE because all insulating materials are carefully selected, applied and treated to give long service, even under abnormal conditions.

DEPENDABLE because the finished wires must meet ALL our high standards of accuracy and quality.

Thermo Electric Wires, for all standard thermocouple calibrations, are insulated with the latest types of plastics, asbestos and fiberglass. The fibrous insulations are compound saturated for added protection against moisture and abrasion. For severe abrasive conditions, a metallic wire or ribbon is braided directly over the outer insulation.

For detailed specifications—write for Wire Bulletin 30-R.

Thermo Electric Co., Inc.
FAIR LAWN NEW JERSEY

When inquiring check CP 3693 on handy form, pgs. 2-3

New Cleaner

For Laboratory



Glassware Easy On Hands

A NEW detergent — Oakite Composition No. 67 — is proving particularly useful in the washing of laboratory glassware. Here's why! It has excellent water-softening properties and vigorous cleansing action. Yet it is extremely easy on the hands.

Oakite Composition No. 67 may be used with good results in hard water areas. It rinses well. Surfaces dry down without streaking. We shall be glad to furnish complete details on application to Oakite Products, Inc., 18F Rector Street, New York 6, N. Y.

OAKITE
SPECIALIZED INDUSTRIAL CLEANING
TRADE MADE REG. U. S. PAT. OFF.
MATERIALS • METHODS • SERVICE
Technical Service Representatives in Principal Cities of U. S. & Canada

When inquiring check CP 3694 on handy form, pgs. 2-3

CHEMICAL PROCESSING

FOR THE LABORATORY

Makes allowance for most errors and permits precision of $\frac{1}{2}$ per cent . . .

compensates for lead and clip resistance, aging of batteries — reads fractions of an ohm to 50,000

Uses: Precise measurements of electrical resistance from 0.05 to 50,000 ohms or from 0.05 to 100,000 ohms.

Features: Design of this instrument allows precision of $\frac{1}{2}$ per cent to be realized in measurements.

Description: Precision Ohmmeters are available in two models: #244A with a range of 50/500/5000/50,000 ohms and a lowest cardinal point of 0.05 ohms, #246A with a range of 100/1000/10,000/100,000 ohms and the same lowest cardinal point.

Though small ($7\frac{1}{4} \times 6\frac{1}{8} \times 7\frac{1}{2}$), they contain their own batteries and also a circuit which compensates for increasing internal resistance of the batteries as they age. Other compensating circuits allow for clip resistance and lead resistance.

Accuracy of $\frac{1}{2}$ per cent amounts to plus or minus $\frac{1}{32}$ -inch on the

scale. Lowest reading of the 244A is $\frac{1}{8}$ -inch from zero; that of the 246A, $\frac{1}{16}$ -inch from zero. Scales of the instruments are hand-stepped and calibration may be verified with built-in calibration resistors accurate to one-half of a per cent in the temperature range of -30 to $70^\circ C$.

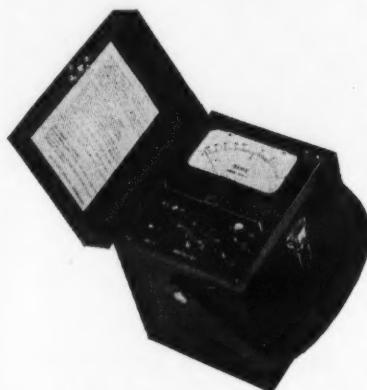
Units weigh $11\frac{1}{4}$ pounds including the two #6 dry cells.

(Current delivery is running 30 days from Associated Research, Incorporated, Dept. CP, 3758 W. Belmont Ave., Chicago 18, Ill. . . or for more information check CP 3695 on handy form, pages 2 and 3.)

Nine papers cover research on atomic radiation instruments

Chemistry and physics underlying atomic energy radiation instruments are presented in 187-page report. Nine papers compose report delivered before symposium sponsored jointly by AEC and Department of Defense. Papers discuss the effects of atomic radiations on organic, aquo-organic, and aqueous systems. One paper describes device which indicates radiation intensity by changes of color of a chemical. Work on chemistry and physics of radiation dosimetry was carried out under supervision of Army Chemical Corps.

Descriptive material covers use of crystalline substances which emit light or give off electrons when hit by atomic radiation. Papers may be valuable in their explanation of certain phenomena pertinent to electronics industries. Report includes several photographs, diagrams, graphs, and tables. To obtain "Report of Symposium IV; Chemistry and Physics of Radiation Dosimetry," remit \$4.75 direct to Office of Technical Services, U. S. Department of Commerce, Washington 25, D.C.



Two models: 50,000 and 100,000 ohms

steam trap trial shows how to increase production

FREE 60-DAY TRIAL
Prove what Yarway Impulse Steam Traps will do in your own plant. Install a trial trap. See your Industrial Distributor or write direct.

Flat-work ironers in Pennsylvania laundry heat up in 15 min. with Yarway traps instead of previous 1 1/2 hours.

West Coast Rubber molding plant cut heating cycle on presses from 15 minutes to 8 minutes by using Yarway traps.

Kettles in New England hospital kitchen reach cooking temperature in 12 minutes with Yarways instead of previous 25 minutes.

Southern textile mill gets faster factory slasher production for first time due to faster heating-up with Yarway traps.

These 4 plants—each in a different industry—have something in common. Each installed a Yarway Impulse Steam Trap on a trial basis—and after witnessing the production-boosting results, they standardized on Yarway traps.

Experiences like these are found in hundreds of plants because Yarways are designed to get equipment hot in a hurry, and therefore into production fast.

Coupled with other Yarway Impulse Steam Trap advantages like small size, easy installation, stainless steel construction, easy maintenance and low cost—it explains why more than 800,000 Yarways have already been installed.

YARWAY
the steam trap
designed with more production
in mind

Let Us Show You How
DESCO
LUBRICANTS
REDUCE
PLUG VALVE

Maintenance **1/3**



Only 3 DESCO Standard Service Lubricants and 1 DESCO Special Lubricant are needed to service all the lube plug valves you have. With DESCO Lubricants you not only reduce your investment in lubricants but reduce the hazard of using the incorrect lubricant. And most important — they stand up where others fail — they save your valves!

FOR HYDROCARBON SERVICE — two types. #600 All-Purpose — 40° F. to 500° F. #750 High Temperature — 40° F. to 900° F.

FOR ACIDS AND CAUSTICS — #400 — with a temperature range from 10° F. to 480° F.

FOR LPG Service — #650 — A specially developed lubricant for LPG service from —50° F. to 150° F.

DESCO Lubricants are packed in convenient individual sticks in 6 sizes. 12 to 24 sticks to a carton. 6 cartons in a case. Write for catalog and prices.

10 TIMES FASTER LUBRICATION

With the **DELTA** High Pressure Gun, **DELTA** Fittings and **DESCO** Specialized Lubricants . . .

... you can lubricate 10 to 15 valves in the time usually required to service one with conventional jack screw.



DELTA
ENGINEERING SALES CO.
806 Louisiana Ave. • Phone 5-2416
SHREVEPORT, LOUISIANA, U.S.A.
Sales Office in All Principal Cities

When inquiring check CP 3700
on handy form, pgs. 2-3

FOR THE LABORATORY



Spectrometer can be used at maximum resolving power

is limited is a result of the shortage of suitable 1P28 tubes.

(Further details are contained in Bul 284-11 of Beckman Instruments, Inc., Dept. CP, South Pasadena, Calif. . . . or for more information check CP 3701 on handy form, pages 2 and 3.)

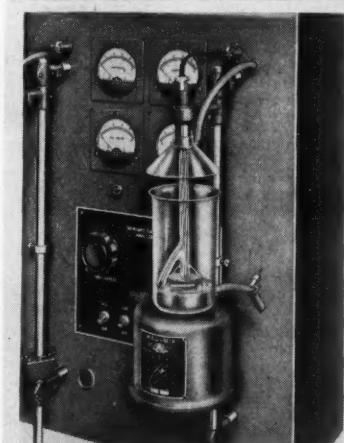
*Speeds analysis of metals
and preparations for
polarograph . . .*

dual units are arranged for operation of two mercury cathode deposition cells simultaneously

Uses: Heavy metals analysis, or separation, and preparation of samples for polarographic analysis or other electrochemical operations.

Features: Fast, simple operation allows up to five grams of metal to be removed from the sample rapidly and conveniently.

Description: Dual Mercalyser is a combination of two identical units. Each is equipped with a mercury cathode cell designed to operate at 0 to 10 volts, 0 to 10 amp. Current control is by a single knob and current can be reversed in each half of the analyser. Ammeters and volt-meters on each side of the unit indicate cell conditions.



Five grams of metal in a short time

stirrers, clamped to support rods as shown, also act as support shelves for the cells. Glass funnel hood is supplied and connections for hooking up to a vacuum system are provided.

Unit is housed in an enameled steel cabinet furnished with stainless rods and fixtures. Power is supplied from 115/230v AC line.

(Product of Precision Scientific Company, Dept. CP, 3737 W. Cortland St., Chicago 47, Ill. . . . or for more information check CP 3702 on handy form, pages 2 and 3.)

Powders

Pastes

or Liquids



BLENDER *does a finer, faster job!*

Whether you work with powders, pastes or liquids, you can depend on a **DAY D-10 BLENDER** to boost production. Scientifically designed agitators insure constant, thorough blending action. Sturdy outboard bearings provide ample support for the agitator shaft, remain free from abrasive action by the material being mixed and also eliminate bearing loads on the stuffing boxes. Heavy-duty design includes a rigid frame that is free from vibration, plain or stainless steel tank and a geared head motor with roller chain drive. Discharge at center or either end is optional. Available with Spiral Ribbon Agitator for paste, semi-paste, granular or liquid products.



DRY COLOR AGITATOR
Optional, supplied when necessary for materials such as heavy-bodied powders.

Call your J. H. Day Sales Engineer or write for details. The J. H. Day Co., Inc., 1143-A Harrison Ave., Cincinnati 22, Ohio.

DAY

THE J. H. DAY COMPANY, CINCINNATI 22, OHIO

When inquiring check CP 3703 on handy form, pgs. 2-3

ROTARY UNIONS

(Trade Name)

Type "S"
ROTARY UNION

TYPE "ESG" ROTARY UNION

(Flange siphon type with all-graphite bearing construction)

A REVOLVING STEAM CONNECTION

Pipe sizes 1/4" through 3"



Mechanical Maintenance ... Zero

9,922 ROTARY UNIONS out of 10,000 gave their owners one standard year's service without tightening or adjusting attention of any kind . . . without causing one single minute's down-time. Many users report such trouble-free service for periods of three years or more.

ROTARY UNIONS will save you money on rubber and plastics extrusion equipment, flake rolls, grain dryers, pigment grinders, calenders, printing and coating machines, and other revolving equipment which must be heated or cooled. There are over 40 standard sizes and styles of ROTARY UNIONS for ordinary applications and our own direct sales engineers will be glad to recommend the proper unit or to discuss your special sealing problems. Please contact our nearest office or write Dept. 7C for our latest catalog.

"Where Good Connections Count"®

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Offices in Chicago, Cleveland, Philadelphia, Providence, New York, Montreal, Toronto

When inquiring check CP 3704 on handy form, pgs. 2-3

FOR THE LABORATORY

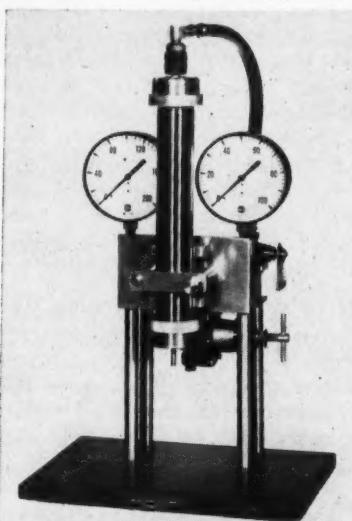
Viscosity cup used in pressure range from 0 to 100 psi . . .

can be dismantled in less than ten seconds

Uses: For viscosity studies of plastisols, organosols, mill pastes, greases, and dispersions.

Features: Severs Extrusion Rheometer has been designed so that it can be dismantled in less than ten seconds.

Description: Measures viscosities in terms of pressure, quantity, time, and orifice size. Operating pressures



Pressurized instrument for viscosity studies

range from 0 to 100 psi. High pressure models operate up to 3000 psi. Jacketed models may also be obtained which give accurate temperature control.

(Product of Castor Laboratory Equipment Company, Dept. CP, 741 Shady Lane, Pittsburgh 34, Pa. . . . or for more information check CP 3705 on handy form, pages 2 and 3.)

Stepless speed control for 3/4-hp DC motor uses AC power . . .

selenium rectifiers insure long life and reserve power

Uses: For controlled speed applications of electric motors of 3/4-hp or less.

Features: Unit provides stepless control of DC motors thus makes high-torque-starting possible with little heating. Power needed, however, is conventional 115v AC.

Description: Type 1702-A Variac® Speed Control uses a variac trans-

FILTER MEDIA

for Chemical Processing

FILTER PAPER

LABORATORY . . . INDUSTRIAL . . . Made from finest materials for accuracy and dependability . . . light and heavy weights . . . slow and fast filtering speeds . . . large stock maintained . . . cut to any size and pattern . . . samples furnished for experimental purposes.

FILTER CLOTH

Cottons, wools, felt, glass, nylon, silk, vinyon, saran, metal mesh and many other synthetic materials cut and sewn in all shapes and sizes . . . many weaves, weights and finishes.

ASBESTOS PADS

Quality filtering pads furnished in a range of grades varying in porosity and filtering characteristics. Sizes and shapes for all needs.

OTHER "FILPACO" PRODUCTS: Filters, stainless steel storage and mixing tanks, fillers, pumps, conveyors, portable agitators, fittings, and filter aids.

WRITE TODAY for further information and samples!

We will be pleased to discuss your *Filtration Supply and Equipment Problems*, without obligation.



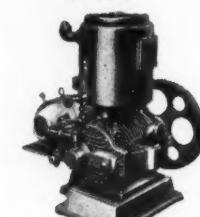
FILPACO INDUSTRIES
The FILTER PAPER CO.

2432 S. Michigan Ave. Chicago 16, Ill.

When inquiring check CP 3706 on handy form, pgs. 2-3



Type SS . . . for vacuum up to 5mm on tight systems, for dry or semi-wet work.
Capacities 6 to 375 c.f.m.



Type RP . . . for vacuum up to 10 microns or better on dry or wet work.
Capacities 17 to 845 c.f.m.

For All Vacuum Requirements in Process or Lab Up to 10 Microns or Better...

BEACH-RUSS ROTARY VACUUM PUMPS

- Faster Pump Down
- Superior Mechanical Efficiency
- Longer, More Dependable Service

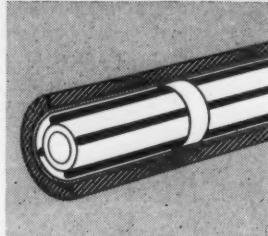
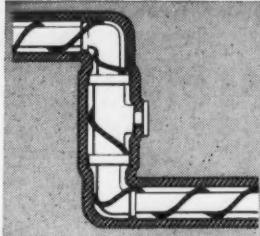
Ask us to put your name on the mailing list for "Much Ado About Nothing" . . . the Beach-Russ house organ that keeps its readers posted on the latest developments in vacuum processes.

BEACH-RUSS COMPANY

46 CHURCH STREET - NEW YORK 7, N.Y.

When inquiring check CP 3707 on handy form, pgs. 2-3

CHEMICAL PROCESSING



HEAT PIPES easily and economically with G-E Calrod* heaters or heating cable. Wrapped around or clamped on, they're easy to install.

G-E CALROD* HEATERS GIVE EFFICIENT PIPELINE HEATING

To speed the flow of viscous materials such as plastics, asphalt, oils, foods, molasses—install G-E heating cable or tubular heaters now. Wrapped around or clamped on pipes, they do an economical and efficient job of warming the contents of pipes. Heating cable will help to prevent water pipes and valves from freezing and bursting. And G-E thermostatic control makes both jobs automatic.

FOR FREE BULLETINS, complete catalog of heaters and devices, GEC-1005, and "Heating Pipelines," GEA-5095, call your nearby G-E Sales Office or write: Section 720-74, General Electric Company, Schenectady 5, N. Y.

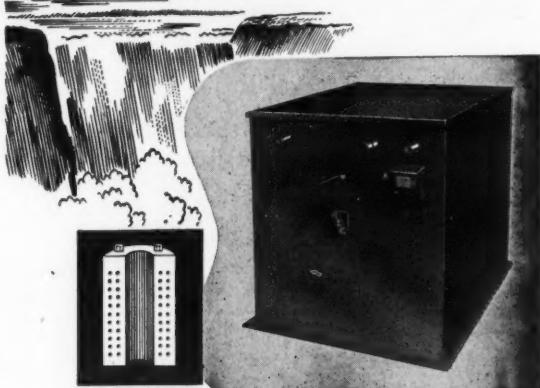
*Registered Trade-mark

GENERAL ELECTRIC

When inquiring check CP 3708 on handy form, pgs. 2-3

HEAVY DUTY LIQUID COOLERS

Cool water... lots of it



A liquid cooler of high capacity, with liquid and refrigerant coils cast in aluminum blocks, eliminating freeze-up damage. Write for specifications.

THE HEAT-X-CHANGER CO., Inc.

BREWSTER - NEW YORK

When inquiring check CP 3709 on handy form, pgs. 2-3

JULY, 1952

FOR THE LABORATORY

former and two full-wave selenium rectifier bridges. Used with DC motors, it provides for armature, field or series field connection. It is also equipped with safety devices — fuse, circuit breakers.

Circuit and operation are similar to earlier smaller units.

(Product of General Radio Co., Dept. CP, 275 Massachusetts Ave., Cambridge 39, Mass. . . . or for more information check CP 3710 on handy form, pages 2 and 3.)

Add six reagents to analytical line . . .

include two cerium salts for spectrographic studies

An excellent primary standard for the Karl Fisher Reagent is S-435 Sodium Tartrate Dihydrate. It is extremely stable, even in high humidities, and can be kept for long periods without special storage precautions. It offers a water content that is quantitatively titrable to a sharp end-point — varying not more than —0.05% from theory. Available in 1/4-lb, 1-lb and 5-lb quantities.

B-260 Benzidine Dihydrochloride is now available for detecting blood, estimating hemoglobin, determining acetaldehyde, furfural, sulfate and numerous cations. Reagent is available in 25 gm, 100 gm, 500 gm and kgm quantities.

Another new addition is D-37 Methylene Chloride, important as a non-flammable solvent and biological preservative and in manufacturing many organic compounds. D-37 Methylene Chloride is available in 1-lb, 5-lb, and gal lots.

M-282 Methyl Cellulose, N.F. 1500 cp rounds out the range of available methyl cellulose viscosity types for manufacturer. It is designed for maximum viscosity with minimum solids — such as the stabilization of emulsions. M-282 is available in 1- and 5-lb lots.

Demand for chemically pure cerium salts in spectrographic studies brings forth C-252 Cerium (ous) Chloride, C.P. and C-260 Cerium (ous) Oxalate, C.P. They are available in oz and 1/4-lb quantities.

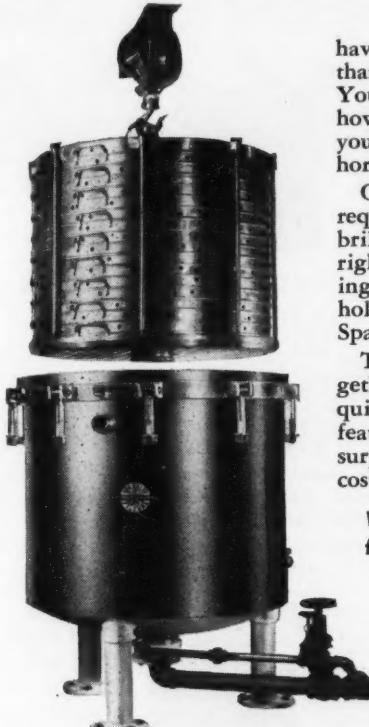
(Announced by Fisher Scientific Co., Dept. CP, 717 Forbes St., Pittsburgh 19, Pa. . . . or for more information check CP 3711 on handy form, pages 2 and 3.)

SPARKLER FILTERS·SPARKLER FILTERS

How Much Does Pre-coating Cost You?

Do you have to use costly fibrous material to get a pre-coat surface that will hold diatomaceous earth or other filter aids you may be using? The high cost of asbestos fibers used day after day, to build up a base for pre-coating, far exceeds the cost of filter cloths.

SPARKLER HORIZONTAL PLATE FILTERS



have a lower pre-coat cost than any other type of filter. You may be surprised to find how much time and filter aid you can save in pre-coating horizontal filter plates.

Only a very thin pre-coat is required, and you can get brilliant clarity in filtration right from the start. No priming material is necessary to hold any kind of filter aid on Sparkler horizontal plates.

This pre-coat economy together with the time saving, quick change plate assembly feature make Sparkler Filters surprisingly low in operating cost.

Write Mr. Eric Anderson for engineering service on your filtering problems.



SPARKLER MANUFACTURING CO.
Mundelein, Illinois

Sparkler International, Ltd. Komitter & Co.
Herengracht 568, Amsterdam, Holland 35 Chittaranjan Ave., Calcutta 12, India
Sparkler Western Hemisphere Corp. Mundelein, Ill., U.S.A.

Manufacturers of Fine Filtration Equipment for More Than a Quarter of a Century

SPARKLER FILTERS·SPARKLER FILTERS

When inquiring check CP 3712 on handy form, pgs. 2-3

Make Your Metal and
Wooden Containers
Last Longer... With

"SNAP-IN" Removable RUBBER LINERS

"SNAP-IN" Loose Rubber Liners are pliable rubber or synthetic pouches easily fitted into metal or wooden barrels, drums, vats and other containers to afford complete protection from the deteriorating action of acids, alkalies, salt solutions and other corrosive liquids. In wooden receptacles, they prevent absorption.

Carefully made to exacting specifications, these liners are smooth, strong, tough and durable. Their wide use among chemical plants, fertilizer plants, laundries, etc., is evidence of their consistent quality and the very practical savings they assure . . . not only through their protective properties, but also in the easy, low-cost method by which they may be procured and applied.



As illustrated, the liner is dropped into the container and held in place by snapping the liner's rubber lip over the container's rim. A rubber-covered lid tightened down on the lip assures a perfectly leakproof receptacle. When repairs to the metal drum or barrel are necessary, the liner can quickly be removed and replaced.



From one container, shipped to our factory, Trenton, N. J., we can supply "Snap-in" Liners for any number of containers of identical size and shape. This service is prompt and efficient.



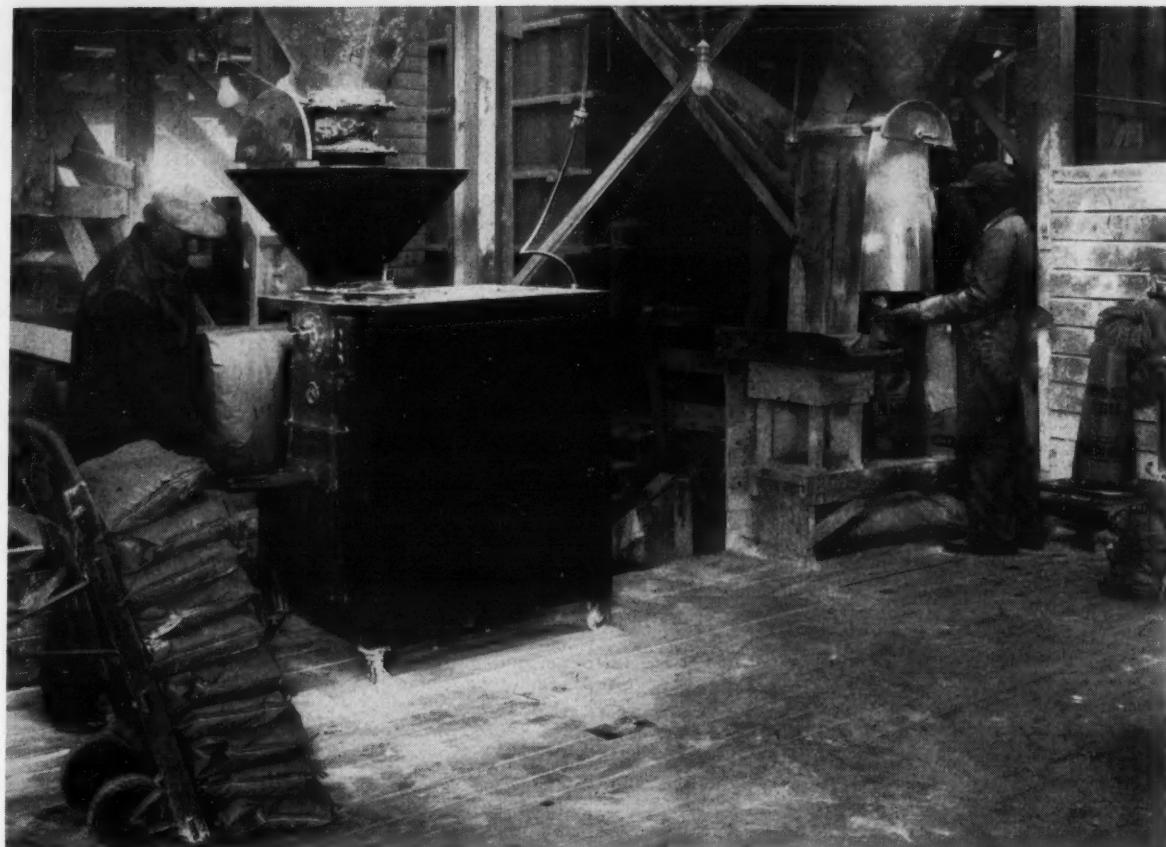
Contact Our Nearest Branch for Quotation



GOODALL RUBBER COMPANY

GENERAL OFFICES, MILLS and EXPORT DIVISION, TRENTON, N. J.
Branches: Philadelphia - New York - Boston - Pittsburgh - Chicago - Detroit - St. Paul - Los Angeles
San Francisco - Seattle - Portland - Salt Lake City - Denver - Houston - Distributors in Other Principal Cities

When inquiring check CP 3713 on handy form, pgs. 2-3



It's in the Bag Faster — and with Less Men When Operations Are Simplified

Installation of modern bagging machines cuts cost of handling whiting pigment, increases output

PROBLEM: In bagging whiting pigment at the Metro-Nite Company's plant in Milwaukee, a total of five men were employed. Two men operated the old manual-style bagger and scaled the bags — another man alternated between the two packers hauling bagged material to the warehouse. Method was slow, required a great deal of manual effort, involved considerable expense.

Solution: An automatic bagging machine was installed about a year ago that would give both the correct weight of the product while filling the 50 lb bags and that would deliver them ready for immediate shipment.

Results: Operating 10 hr per day, the machine scales and packs approximately 60 of the 50-lb bags of the pigment each hour — amounting to a daily output of

approximately 600 bags. Operation of the machine eliminated 1) the need for adding to or removing product to determine correct weight, 2) tying the bags by hand as was done formerly, 3) minimized dust hazards and material waste.

Impressed with the performance of the first machine which resulted in "no trouble or maintenance encountered whatsoever," the company recently installed a second unit. Now the same job requires only three men on both machines, instead of the five formerly needed, and is done quicker, cleaner, and more efficiently.

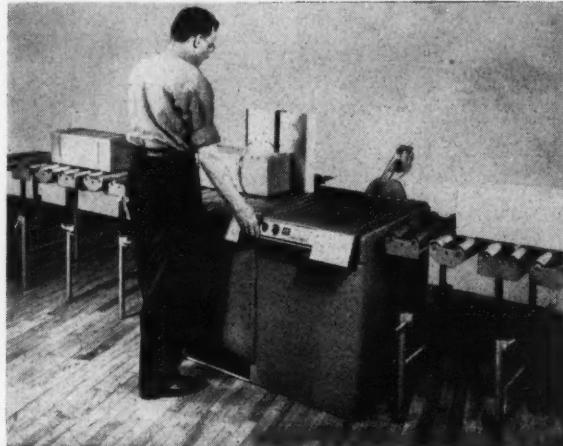
(Auger-Matic Bag Packer used by the company is made by the E. D. Coddington Mfg. Co., Dept. CP, 5024-5042 N. 37th St., Milwaukee 9, Wis. . . . or for more information check CP 3714 on handy form, pgs. 2 & 3.)

**Electric machine replaces muscle
in flat steel strapping
of packages . . .**

produces welded joints with strengths approaching tensile strength of strapping used

Uses: For high volume flat steel strapping of packages of different sizes. For record of piece work, machine is equipped with counting mechanism which records number of straps applied per day, per shift or per person.

Features: Color-coordinated housing may be integrated into standard conveyor lines. Machine produces welded joints with strengths approaching tensile strength of the



by pressing cycle bar with right hand, operator causes steel strapping on package to be tightened, cut, and welded

size of strapping used. Design of machine assures full safety to operator. Tensioning or welding is not possible while operator is feeding strap. He must first release his hand from strap before actuating cycle bar to tighten it. Skilled labor is not necessary for operation. Women can easily strap packages at high volumes with uniform tensions.

Description: In operation, packages approach machine on roller conveyor until they are centered over strapping device. Operator feeds out required length of strap by deflecting a pedal with his foot. He guides strap around package and then actuates cycle bar with his right hand. This tightens strap to predetermined tension, cuts the coil, and joins the two ends by welding.

Machine is electrically powered and electronically operated. Units can accommodate strap sizes in widths of $\frac{3}{8}$, $\frac{1}{2}$, $\frac{5}{8}$, and $\frac{3}{4}$ inch and in thicknesses up to .023 inch. Full range of tensions up to 750 pounds can be obtained. Machine's 31-inch table height permits it to be installed in standard height conveyor systems. Overall dimensions are $43\frac{1}{8} \times 45 \times 47$ inches. It weighs 1350 pounds.

(Product of Acme Steel Company, Dept. CP, 2840 S. Archer, Chicago, Ill. . . or for more information check CP 3715 on handy form, pages 2 and 3.)

**Describes dust control for
isolated machines**

Dust from widely scattered sources may be controlled most efficiently with small, individual units, according to manufacturer's four-page bulletin. Technical information and specifications for two types and four sizes of filters are presented. Cloth filter bags and a shaking mechanism are used in the construction.

Bulletin is issued by Dracco Corporation, Dept. CP, Harvard Ave. and East 116th St., Cleveland 5, Ohio. When inquiring specify CP 3716 on handy form, pgs. 2-3.



CHASE sharkkraft SCUTTLES

THE PACKAGING PIRATE

THE ALL-CRINKLED MULTI-WALL BAG

THAT CUTS COSTLY BREAKAGE

IN THE PACKAGING OF:

- Farm Products
- Powdered Milk
- Mineral Concentrates
- Seeds ● Chemicals
- Pharmaceuticals
- Fertilizers ● Rock Products
- Meat Scraps and Tankage
- Starch Products



for Better Bags... Better Buy Chase!

CHASE BAG Co.

GENERAL SALES OFFICES: 309 W. JACKSON BLVD., CHICAGO 6, ILL.

BOISE • DALLAS • TOLEDO • DENVER • DETROIT • MEMPHIS • BUFFALO • ST. LOUIS • NEW YORK • CLEVELAND • MILWAUKEE
PITTSBURGH • KANSAS CITY • LOS ANGELES • MINNEAPOLIS • GOSHEN, IND. • PHILADELPHIA • NEW ORLEANS • ORLANDO, FLA. • SALT LAKE CITY
OKLAHOMA CITY • PORTLAND, ORE. • REIDSVILLE, N. C. • HARLINGEN, TEXAS • CHAGRIN FALLS, O. • WORCESTER, MASS. • CROSSETT, ARK. • SAN FRANCISCO

When inquiring check CP 3717 on handy form, pgs. 2-3



Protect Your Products

with NILES Lacquer-Lined
STEEL DRUMS



● Perishables . . . stored and shipped in NILES Lacquer-Lined Steel Drums . . . are doubly protected.

Because of the high strength and long life of steel, and the liquid-tight NILES drum construction, there is a minimum of spoilage from without the drum.

NILES long-life, durable-finish lacquer linings add equally to minimum spoilage from within.

These lacquer linings are neutral to a wide range of materials in both the chemical and food fields . . . protecting content color, flavor and purity from the filling to the emptying of the drum. These drums are easy to clean, easy to keep clean and sanitary.

Until your spoilage losses have reached an absolute minimum, you owe it to your operating profits to investigate NILES Lacquer-Lined Steel Drums. Remember: Container failure may cost more in content spoilage than in replacement of the container itself. Write today for complete information to . . .

NILES STEEL PRODUCTS DIVISION
REPUBLIC STEEL CORPORATION
462 Walnut St. • Niles, Ohio



NILES
METAL BARRELS AND DRUMS

When inquiring check CP 3718 on handy form, pgs. 2-3

Page 102

PACKAGING

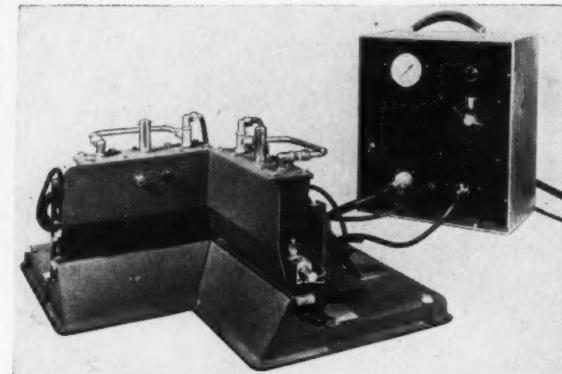
Seals packages on two sides simultaneously and with even pressure . . .

with one-foot units, heat sealers can be built up to meet special needs for shape or size

Uses: For making side and end seals in one heat-sealing operation.

Features: Bar-type, heat sealing jaws come in 1' lengths, making it possible to combine several to meet individual requirements for size or shape of packages. Temperature and pressure are accurately controlled.

Description: As shown in photo, two bar-type heat-sealing jaws are set at right angles, but the same construction can be used for other angles up to 180°.



Seals packages simultaneously on two sides

Angles can be also made for right or left-handed use depending upon direction of production line. A U-shaped heat-sealer can be built which seals three sides of a single pouch bag in one operation. Same controls of heat, pressure, and dwell-time are used. Heat range is up to 500°F; jaw pressures at 80 lb, dwell-time in split-seconds up to 15 seconds. Heat, pressure, and dwell-time are all combined to give uniform seals on all laminated or coated barrier materials.

(Development of Packaging Industries, Dept. CP, 50 Church St., Montclair, N. J. . . or for more information check CP 3719 on handy form, pages 2 and 3.)

Advantages, properties, and use of foam packaging material

Methods and advantages of packing objects in phenolic foamed resin packings are detailed in 8-page booklet. Information also covers the properties and process of foaming the resin for packaging purposes. Production-cost analysis and postal savings comparator table suggest some economic benefits of this packaging material. Among properties said to be unique to this product are high load-bearing capacity and resilience, good thermal-insulation, flame resistance, and retention of favorable packing characteristics even when soaked.

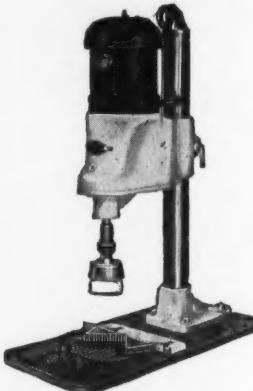
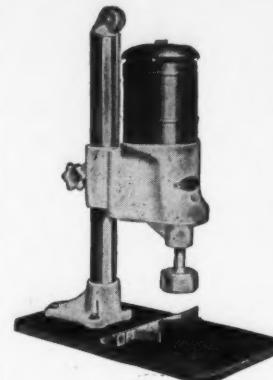
Booklet J-721a is issued by Bakelite Company, Division of Union Carbide and Carbon Corporation, Dept. CP, 122 E. 42nd St., New York 17, N. Y. When inquiring specify CP 3720 on handy form, pages 2 and 3.

See PROCESSING AND ENGINEERING DATA sheets for insertion in loose-leaf binders
pages 156, 158, 160, & 162.

A new semi-Automatic capper for

FRICITION CAPS

The new Swanson Model 50-D semi-automatic capper properly sets all types of friction cap closures on glass, metal or fibre containers. Sturdy cam gear mechanism gives ample power for ANY friction cap setting—delivering fifty two-inch strokes per minute for speedy, low cost performance without operator fatigue. Uniform safe pressure is distributed to entire friction cap surface. Portable or permanently mounted on conveyor table, it is adjustable to any container height and pressure, made for long continuous, trouble-free service.



FOR SCREW CAPS

The improved Model 49-C semi-automatic capper for screw caps. No pedals to push, no lever to pull, no hand piece to hold, caps 50 jars a minute, eliminates breakage, no damage to cap finish, portable or permanent mount. Handles any caps up to 132MM in size, metal, plastic, or composition.

Both cappers fully tested in actual production line operation. Send for full particulars and prices.

W. H. SWANSON and COMPANY
P.O. Box 294

When inquiring check CP 3721 on handy form, pgs. 2-3

Labor Cost Reduced Amazingly
in DRUM and BARREL HANDLING

SABIN One-Man BARREL TRUCK

Picking up barrels and drums, weighing as much as 800 lbs., is now an easy job for ONE MAN with a Sabin Type "L-3" barrel truck. And the cost of helpers is saved.

Operation is simple. You run truck up to container, hook on at top, and pull back on handle to pick up load. Third Wheel Feature ensures better balance and added safety.

WRITE FOR BULLETIN NO. 48-A
THE SABIN MACHINE CO.
6534 Carnegie Ave.
CLEVELAND 3, OHIO



ALSO TOTE PAN, BOX, CARBOY, KEG TRUCKS!

When inquiring check CP 3722 on handy form, pgs. 2-3

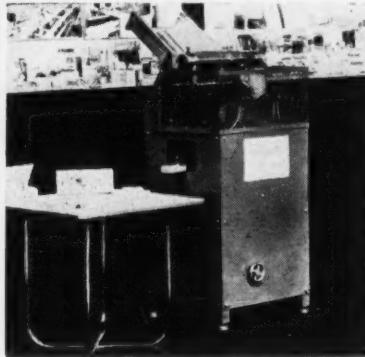
CHEMICAL PROCESSING

PACKAGING

Produces 34-90 trays per minute ready for filling . . .

simple operation changes machine for wide range of sizes

A machine capable of delivering 34 to 90 trays with glued tabs per minute is now available. Gluing the tabs to



Has adjustable speed of 34-90 trays per minute

the sides results in a stronger and firmer tray, manufacturer reports. The machine, known as Tray-Lock, handles a wide range of sizes and features simple operation for quick change-over for the different sizes. Trays are delivered right-side-up, ready for filling.

(Product of Package Machinery Co., Dept. CP, Springfield, Mass. . . . or for more information check CP 3723 on handy form, pages 2 and 3.)

Resin gives paper bags high wet-strength

Folder presents test results on bag paper containing resin which indicate that material exceeds the requirements for high wet-strength. Sample, which was taken from a commercial run in a mill, is included in folder.

Resin has also shown good performance in other types of wet-strength papers such as Government map paper, V-board, and toweling. It is strongly cationic in water solution and is unaffected by high sulfate ion concentration. It may be added as received or diluted with water to any convenient concentration. No acid is needed nor any aging before using.

"Kymene" is issued by Hercules Powder Co., Inc., Dept. CP, Wilmington, Del. When inquiring specify CP 3724 on handy form, pages 2 & 3.

For more information on product at right, specify CP 3725
see information request blank between pages 2-3.



Her fingertips imagine the taste

The lady doesn't trust her eyes alone.

The buyer of Multiwalls is in much the same position.

Aside from package design, it's hard to tell one manufacturer's bag from another's simply by looking at it or fingering it.

Put the bags out of sight and you may be able to see many differences.

Men who buy 85 per cent of all Multiwalls consider* these intangibles more important than any other factor when they choose their supplier.

Invariably, these are among the first questions they ask . . .

"Is this company big enough?"

"Do they have a fair allocation policy?"

"Are their prices competitive?"

"Do they respect delivery dates?"

In a nutshell—

"Are they good people to do business with?"

We can't tell you what the answers are when these Multiwall users consider Union. This we do know . . . and the inference is yours to make—

In these days of industrial pressure, when *dependability* is a fervent wish as well as a word, men to whom Multiwalls are important are placing an increasing share of their orders with Union.

More so every day . . .

IT'S UNION FOR MULTIWALLS



*August, 1951 research study.

UNION BAG & PAPER CORPORATION • NEW YORK: WOOLWORTH BUILDING • CHICAGO: DAILY NEWS BUILDING

PACKAGING

Vibratory table jostles material or parts into place . . .

intensity of vibration is controlled by a knee valve

Uses: In packaging of small parts and granular materials, filling containers with semi-thick liquids, fatigue testing, and other operations requiring platform vibration.

Features: Vibrator, fastened under table, is controlled by knee valve. Intensity of vibration can be varied by



Operator controls vibratory table by pressure on knee valve

pressure control regulator, permitting operation at 20 to 100 psi line pressure.

Description: Table top is 12 x 18 x 1 1/2", floats on heavy steel springs, and is 36" from floor. Standard equipment includes air line filter, automatic lubricator, pressure control regulator, and gage.

(Product of Cleveland Vibrator Company, Dept CP, 2828 Clinton Ave., Cleveland, Ohio . . . or for more information check CP 3726 on handy form, pages 2 and 3.)

Label is plastic tape you can write on

Colorful folder tells story of pressure-sensitive plastic tape you can write on. Pictures and descriptive material emphasize the uses of this labeling aid. Actual sample is attached to folder to show how label may be applied to any smooth surface and written on with pencil or stylus. Plastic tape is resistant to dirt, oil, water, and acids. It is unaffected by temperatures from -40 to 160°F.

Folder discusses available colors, widths, roll lengths, and types of dispensers for use with various rolls. Folder No. 8 is issued by Labelon Tape Co., Inc., Dept. CP, 450 Atlantic



(This advertisement originally appeared in full-color in **TIME**, **BUSINESS WEEK** and **FORTUNE**.)

SERVING INDUSTRY . . . SERVING AMERICA

You are always close to Continental Can with its 65 plants in the United States, Canada and Cuba, 17 field research laboratories and 63 sales offices.



PACKAGING

Ave., Rochester 9, N. Y. When inquiring specify CP 3727 on handy form, pages 2 and 3.

Instantaneous weighing action is achieved through scale indicator drive . . .

speeded by over-size dashpot that stops indicator oscillation

Uses: For industrial packaging and check-weighing.

Features: Fast weighing action through drive that eliminates friction points of indicator mechanism. Over-size dashpot serves to bring indicator to rest quickly. Light-weight aluminum indicator minimizes inertia of its travel. Protected from shock by rubber bumpers.

Description: Over-under scales are available in capacities of 5, 20, and 50 lb. Charts have large figures and plastic dome housing. May be



Light admitted through plastic dome eliminates chart shadows

read from front or back. Sensitive to 1/64 oz.

Check-link system of scale has knife-edge pivots and bearings that reduce friction. Design of bearing assures correct positioning of pivots in bearing grooves. Movable poise on stainless steel beam locks in position after it has been set. Loose weights are used for weighing above capacity of beam. Table space of 21 5/8" by 11 1/4" is required for scale with 20 lb capacity. Unit is light weight, easy to clean.

(Products of Toledo Scale Company, Dept. CP, 1009 Telegraph Road, Toledo 12, O. . . or for more information check CP 3728 on handy form, pages 2 and 3.)

For more information on product at left, specify CP 3729 . . . see information request blank between pages 2-3.

CONTINENTAL CAN COMPANY

CONTINENTAL CAN BUILDING



100 E. 42nd ST., NEW YORK 17, N. Y.



TIN CANS



FIBRE DRUMS



PAPER CONTAINERS



STEEL PAILS AND DRUMS



CAPS AND CORK



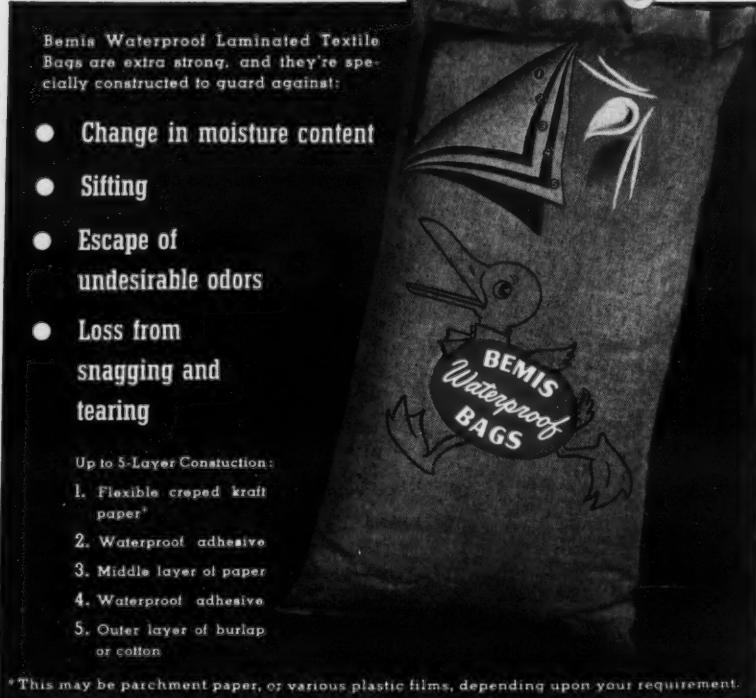
PLASTIC PRODUCTS



DECOWARE

WE CALL 'EM Waterproof Bags

...BUT... THIS KIND OF PROTECTION IS ONLY
ONE OF THEIR FUNCTIONS



Bemis

"America's No. 1 Bag Maker"
408 Pine St., Box 92, St. Louis 2, Mo.

When inquiring check CP 3730 on handy form, pgs. 2-3

PACKAGING

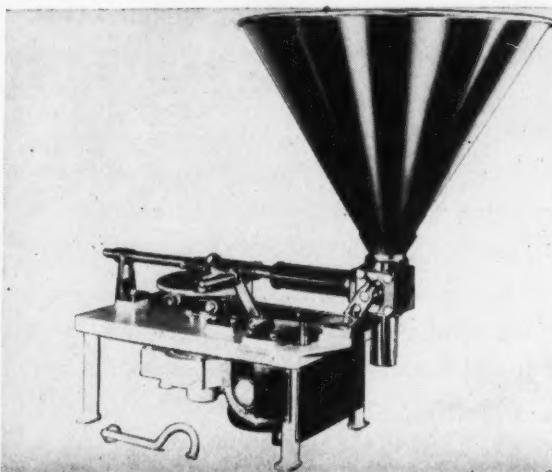
Filling machine is adjustable without parts change . . .

volume of discharge can be rapidly converted from gallon down to quart quantities

Uses: For filling containers with liquids or free-flowing chemicals.

Features: Delivery is easily varied from gallon down to quart units without any change of parts.

Description: Single shot piston accurately loads 15 or more containers per minute. It requires 10 minutes or less for dismantling and cleaning. Machine is avail-



Rate is 15 or more fills per minute

able with 40 gal cone or U-shaped hopper. Construction is of sturdy castings with stainless steel and nickel alloy contact parts.

(Product of F. L. Burt Company, Dept. CP, 571 7th St., San Francisco 3, Calif. . . . or for more information check CP 3731 on handy form, pages 2 and 3.)

Report polyethylene cuts leakage through tiny pin holes

Special grade of polyethylene Layflat tubing is designed for use as liner in containers for corrosive acids and bulk materials. In addition to being chemically inert and moisture proof, material is reported to be free from tiny pin holes which cause leakage and subsequent damage or loss. Known as DI-Grade, tubing is available in wall thicknesses ranging from .0015 to .004 inch and in diameters of 25 through 40 inches.

(Product of Plax Corp., Dept. CP, Hartford, Conn. . . . or for more information check CP 3732 on handy form, pages 2 and 3.)

Aerosol and aerated valves are non-metallic . . .

may be equipped with or without metering feature to control flow of dispersions

Valves for hand size containers are being produced in both aerosol and aerated types, and are equipped with or without metering device to control flow of medium. Latter feature permits delivery of measured amount of dispersions. When container is intended for indefinite storage rupture disk can be furnished for permanent seal. Design of valve specifies that no metal parts are to be

Polyethylene Plastic DRUM LINERS by MEHL

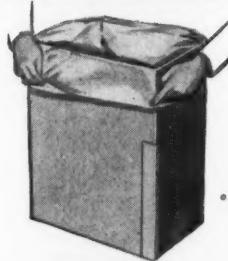
Spectacular economies are effected through these new methods of shipping bulk chemicals. Minimum waste . . . eliminate re-cleaning cost . . . provide top protection for your valuable products.



STEEL DRUM LINER



FIBRE DRUM LINER



BOX LINER

Write, wire or phone us concerning your particular problems.

**MEHL
MFG. CO.**

Phone: Cherry 6430 • 2059 READING ROAD
CINCINNATI 2, OHIO



When inquiring check CP 3733 on handy form, pgs. 2-3

CHEMICAL PROCESSING

PACKAGING

used. Components are made of phenolic combined with special Buna N rubber. Thus, there can be no metal plating to cause ingredient change, such as undesirable electrolytic or "storage battery" effects. Dispensing orifices are drilled through a thick member to keep propellant in contact longer with ingredient used. This is reported to produce a thoroughly mixed, long-lasting spray.

(Product of Viking Valve Co., Dept. CP, Minneapolis 16, Minn. . . or for more information check CP 3734 on handy form, pages 2 and 3.)

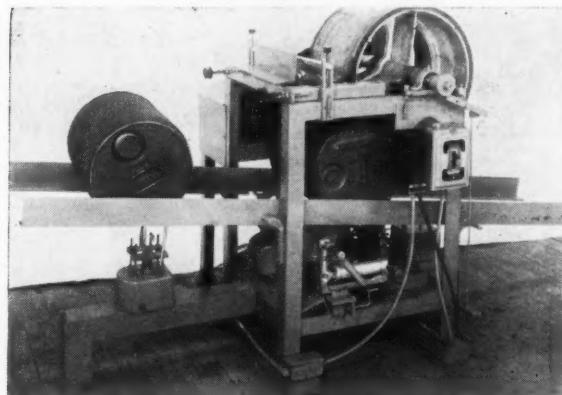
Permits printing all information on 5 gal round cans, drums in one operation . . .

product data is easily set up on printing wheel within five minutes

Uses: For printing all necessary information on 5-gal drums or round cans at the desired time.

Features: All contract information, specifications, service insignias, and inspectors' numbers are easily set up on printing wheel within five minutes. Small data changes are made within seconds. Prints 26 cans per minute.

Description: Automatic printing press can be set anywhere into the production line to speed up the pro-



Prints 5-gal round cans or drums at rate of 26 per minute

duction phases. Liquid ink is used in all colors to give clear, clean printing. Ink requires 15 seconds drying time and is permanently water proof.

(Product of Algene Marking Equipment Co., Dept. CP, 324 W. 26th St., New York, N. Y. or for more information check CP 3735 on handy form, pages 2 and 3.)

Highlights value of pallet loader in package production line

Sixteen-page bulletin describes automatic pallet loader. Pictures and sketches show unit in operation and emphasize its value in volume package production. Sequence of illustrations follows operation of pallet loader, showing way in which it loads pallets in various patterns, according to dimensions of cartons loaded. Unit is capable of forming several different patterns. Engineering data is included in bulletin which specifies size limits on pallets and cartons handled.

"Pallet Loader" is issued by Lamson Corporation, Dept. CP, Syracuse 1, N. Y. When inquiring specify CP 3736 on handy form, pages 2 and 3.

**stainless steel
chemical containers
reduce handling costs**

Light Weight—Strongly made of stainless steel to protect your chemical products while reducing transportation costs.

Safe Pouring—Handy, full curled foot rings are easy to grasp—eliminate hazardous spilling of dangerous acids.

Perfect Stacking—Bottom foot ring fits snugly and securely over top ring of first barrel to build a safe, compact stack.

Positive Identification—Easy-to-read lettering on bottom foot ring quickly identifies owner—advertises owner's name and address. I.C.C. data embossed in top ring.

is practical—transportation costs are lower—storage requirements are reduced—breakage and spilling hazards are eliminated. Made in several types of stainless steel for specific product protection. Write today for full details.

Pressed Steel Tank Company

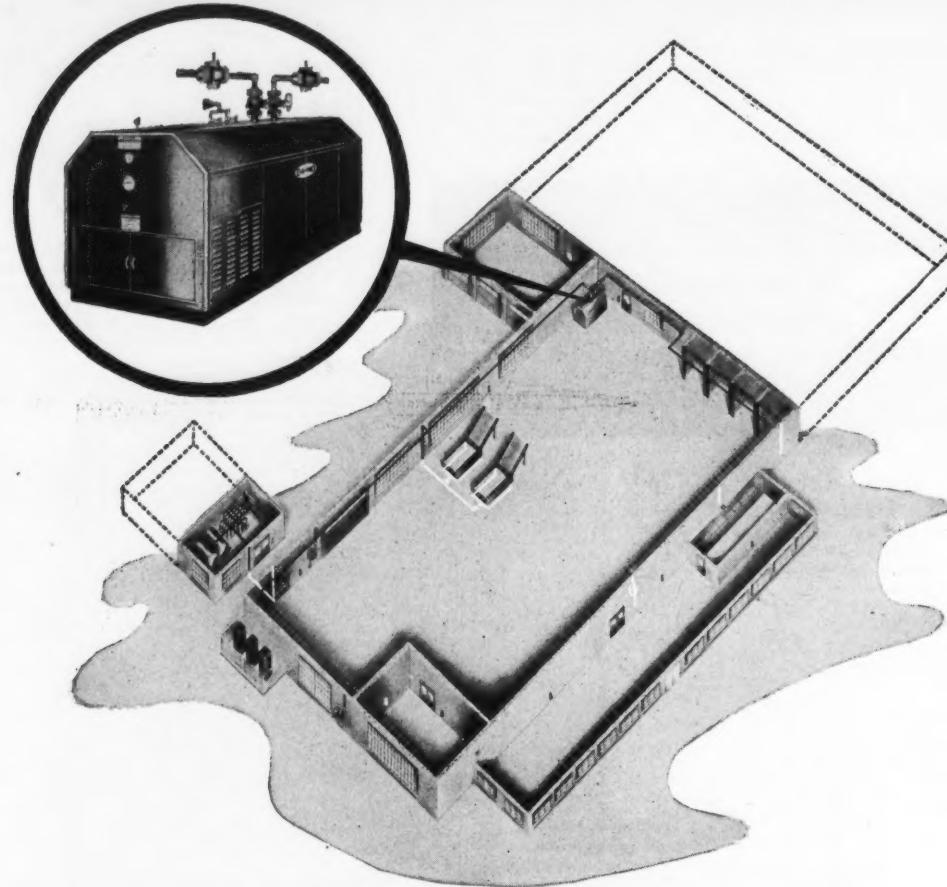
Manufacturer of Hackney Products

1463 S. 66th St., Milwaukee 14 • 1387 Vanderbilt Concourse Bldg., New York 17 • 235 Hanna Bldg., Cleveland 15
936 W. Peachtree St., N.W., Room 126, Atlanta 3 • 208 South La Salle Street, Room 796, Chicago 4 • 568 Roosevelt Bldg., Los Angeles 14

C O N T A I N E R S F O R G A S E S , L I Q U I D S A N D S O L I D S

When inquiring check CP 3737 on handy form, pgs. 2-3





EXPANSIBLE FIRESAFETY

from a single LOW PRESSURE CARBON DIOXIDE storage tank

When expanding your plant, you can't afford to wait for additional fire protection...you need the proper amount at once. However today, material priority regulations slow you up considerably...these delays hold back vital production and resulting revenue. Install a C-O-TWO Low Pressure Carbon Dioxide Type Fire Extinguishing System in your plant now and new construction to come will be firesafe from the start.

With a C-O-TWO Low Pressure Carbon Dioxide Type Fire Extinguishing System, simple piping, running from one centrally located storage tank, instantly transports clean, non-damaging, non-conducting carbon dioxide anywhere in the plant area...to flammable liquids, electrical equipment, storage spaces, manufac-

uring processes and record vaults. Fire at any protected location is extinguished in seconds with an absolute minimum of expense and interruption.

Future plant expansion is quickly and economically provided for by initially installing an oversized low pressure carbon dioxide storage tank...capacities range from one to fifty tons. Discharge facilities can be either manual mechanical, manual electric, automatic mechanical, automatic electric or a combination of these...all are easily extensible at a later date.

Don't take chances with future delayed installations; secure the benefits of highly efficient fire protection engineering today...our extensive experience over the years is at your disposal without obligation. Get the facts now!



C-O-TWO FIRE EQUIPMENT COMPANY NEWARK 1 • NEW JERSEY

Sales and Service in the Principal Cities of United States and Canada
Affiliated with Pyrene Manufacturing Company

MANUFACTURERS OF APPROVED FIRE PROTECTION EQUIPMENT

Squeez-Grip Carbon Dioxide Type Fire Extinguishers • Dry Chemical Type Fire Extinguishers • Built-In Smoke and Heat Fire Detecting Systems
Built-In High Pressure and Low Pressure Carbon Dioxide Type Fire Extinguishing Systems

When inquiring check CP 3738 on handy form, pgs. 2-3

**Air filter is 99.95% efficient
against particles as small
as 0.3 micron**

Removes material as finely divided as
tobacco smoke, ranging from 0.05 to
0.1 micron

USES: For filtration of air to remove smoke, toxic or radioactive particles, bacteria, or any fine dust. It can eliminate radioactive contamination of photographic film or chemicals, safeguard lab ventilation hoods, or pre-



Removes minute particles from air

vent dust from affecting electrical equipment. It is also suitable for air conditioning systems used in pharmaceutical production.

Features: Efficiency has been certified as 99.95% against material of 0.3 micron in diameter. In practice filter has removed particles as small as tobacco smoke, ranging from 0.05 to 0.1 of a micron.

Description: Filter was developed originally to remove radioactive contamination from air exhausted during atomic energy plant operations. It is available in three sizes of 50, 500, and 1000 cfm rated air flow. The 1000 cfm size offers 46,000 sq in of filter area and measures 24 x 24 x 11 1/2". Effective service life when protected by roughing filter is about 1 1/2 years.

(Available from Mine Safety Appliances Co., Dept. CP, Braddock, Thomas, and Meade Streets, Pittsburgh 8, Pa. . . or for more information check CP 3739 on handy form, pages 2 and 3.)

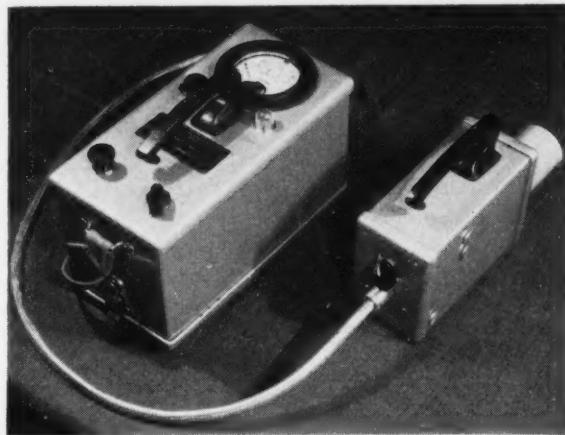
Response proportional to human tissue sensitivity for 0.2-10 mev fast neutrons . . .

counter uses two chambers to achieve discrimination between neutrons and gamma rays

Uses: Dosimeter provides easy measurement of fast neutron radiation.

Features: Design of the instrument provides a response proportional to human tissue sensitivity. Thus, reading of the meter is a direct index of danger to personnel.

Description: Model E-1 Fast Neutron Dosimeter has been nicknamed "Rudolph" because of its protruding red nose counter. Region of proportionality to human tissues response extends from 0.2 to 10 mev and ranges of the instrument are equivalent to 0 to 0.5, 5, 50, and



Total weight: ten pounds

500 counts per second. In order to measure neutrons, counter compares output of two chambers — one gamma sensitive, and one gamma-neutron sensitive. The counter is of the proton recoil type, having two-to-one directional sensitivity and ten-to-one pulse amplitude gamma discrimination.

One part of the counter contains batteries, vibrator power supply, and meter. It is equipped with a strap which allows it to be slung over shoulder. Connected to it with a three-foot shielded cable is the hand unit which contains counter and ratemeter circuitry. Combined weight of both units is about ten pounds. Minimum battery life is reported to be 200 hours.

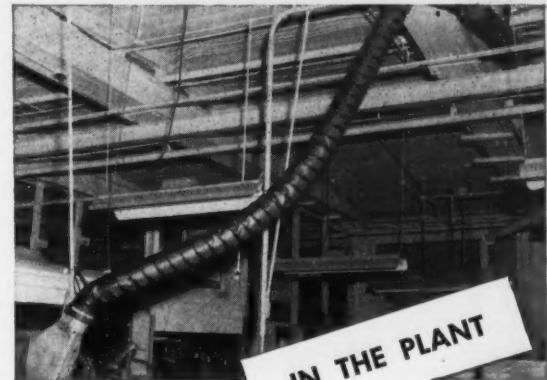
(Announced by Radioactive Products, Inc., Dept. CP, 443 W. Congress, Detroit 26, Mich. . . or for more information check CP 3740 on handy form, pages 2 and 3.)

Bifurcator fans for exhausting hot or dangerous gases

Eight-page bulletin presents capacity ratings and sectional illustrations of bifurcator fans. Units are designed for exhausting fumes or gases which are abnormally hot, flammable or explosive. Fan is set in divided housing with the motor mounted in separate chamber isolated from destructive gases. Specifications and dimensions are included for fans with diameters from 12 through 48". They are capable of handling up to 45,000 cubic feet of air per minute.

Bulletin DB-4-52 is issued by DeBothezat Fans Division, American Machine and Metals, Inc., Dept. CP, East Moline, Ill. When inquiring specify CP 3741 on handy form, pages 2 and 3.

Why move work around to get to present exhaust ducting?



Take SPIRATUBE® to the job!



With SPIRATUBE — the new type flexible ducting — you can set up production lines where you want them without expensive changes in your dust or fume removal system. SPIRATUBE connects quickly, easily to your present lines — and bends anywhere with minimum crimping. No turn is too short, no angle too acute. No elbows or special fittings to bother with in going around obstructions.

Best of all, YOU CAN INSTALL SPIRATUBE YOURSELF! That cuts down-time, keeps your production line going. The initial cost of Spiratube is small . . . and its life equals — sometimes exceeds — rigid ducts.

Standard sizes for all requirements are immediately available from well-stocked distributors — coast-to-coast!

For all ducting systems:

FLEXFLYTE®

SPIRATUBE®

AYRTUBE®

**Flexible
Tubing**
CORPORATION

Guilford, Connecticut

Pasadena 1, California

FREE! Full details on this amazing, cost-saving ducting. Fill in coupon and mail

FLEXIBLE TUBING CORPORATION, Dept. CP-1, Guilford, Conn.

Please send me your new catalog on Flexible Tubing products.

My application is _____

Name _____ Title _____

Company _____

Address _____

City _____ State _____

When inquiring check CP 3742 on handy form, pgs. 2-3

SAFETY

Compact, portable, easy to use, hydrocarbon detector does fieldwork . . .

cylindrical scale adjusted easily to align zero setting with reagent in detector tube

Uses: For determination of toxic concentrations of aromatics.

Features: Aromatic hydrocarbon detector is compact, portable, and requires no special training for its use. Cylindrical scale, graduated separately for benzene, toluene, and xylene, is easily adjusted to bring the zero setting in line with the end of the reagent fill in the detector tube.



"Pocket laboratory" is light, compact

Twelve tubes can be filled at one time and can be safely stored for two or three weeks without variation of their sensitivity. In use, detector stain increases with aromatic concentration.

Description: Instrument includes color scale, tube rack, mixing bottle, mandrel, 12 rubber tube caps, and kit for 12 separate tests. The kit, available separately, contains two vials of granular material, 12 empty detector tubes, and glass cloth swatches. Instrument is supplied in a leather carrying case with shoulder strap.

(Aromatic hydrocarbon detector is product of Mine Safety Appliances Co., Dept. CP, Braddock, Thomas & Meade Sts., Pittsburgh 8, Pa. . . . or for more information check CP 3743 on handy form, pages 2 and 3.)

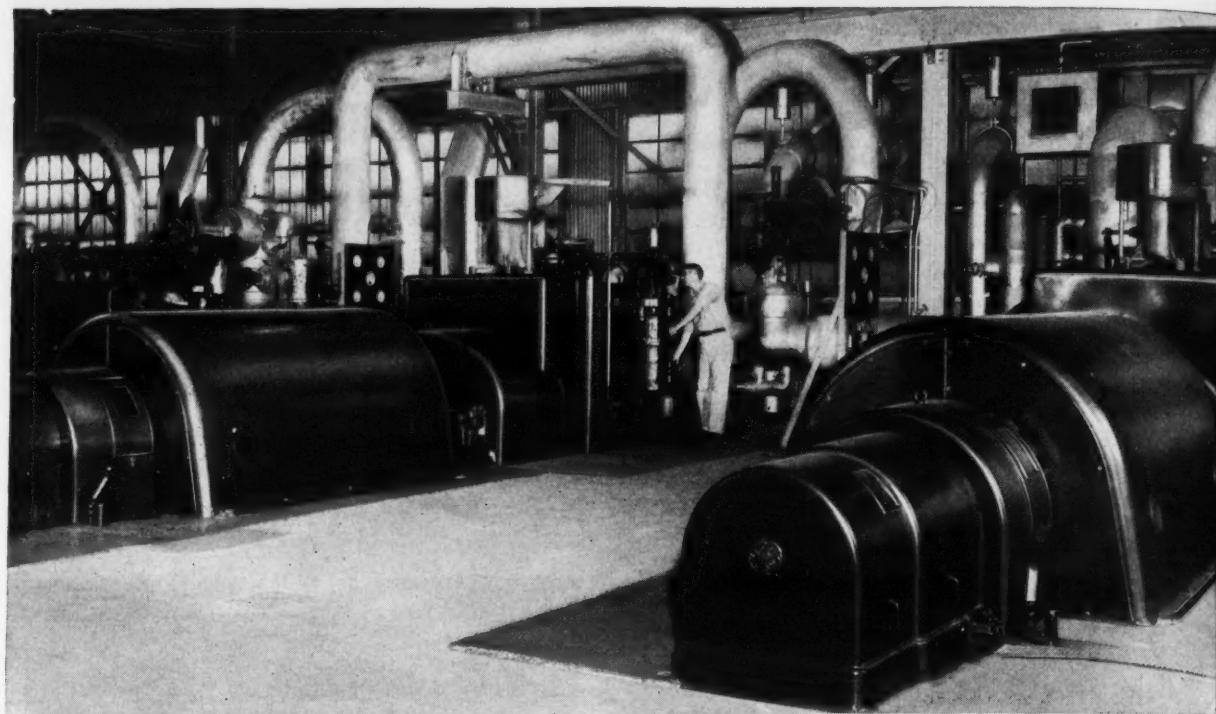
Fire-fighting system operates when air reaches predetermined temperature level . . .

detection device doesn't lag, neither does it operate with quick temp change below danger level

Uses: Detectors are used as temperature sensing elements in a fire protection system. Types are available for ordinary or hazardous locations, with various kinds of mounting arrangements.

Features: Unit's operation is based on principle of rate compensation that assures alarm when temperature of surrounding air reaches a predetermined temperature. Does not have the disadvantages of lag that is present in usual fixed-temperature fire detection devices; nor is it as prone to give false alarms as conventional rate-of-rise detection devices, because it is not as responsive to fast temperature jumps below the selected operating temperature level.

Description: Heart of the Detect-A-Fire unit is depicted

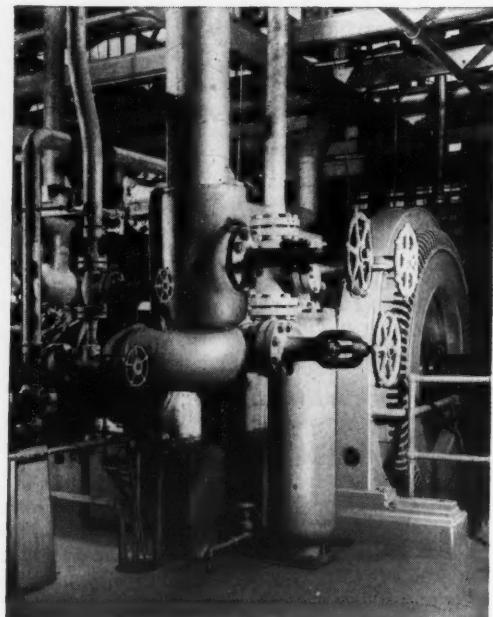


EXTRA POWER, EXTRA PROCESS STEAM is delivered by these 13,800-volt G-E turbine-generators. They utilize steam with high efficiency. Together with other turbine-generators in the plant, they furnish the electric power and all of the plant's process steam.

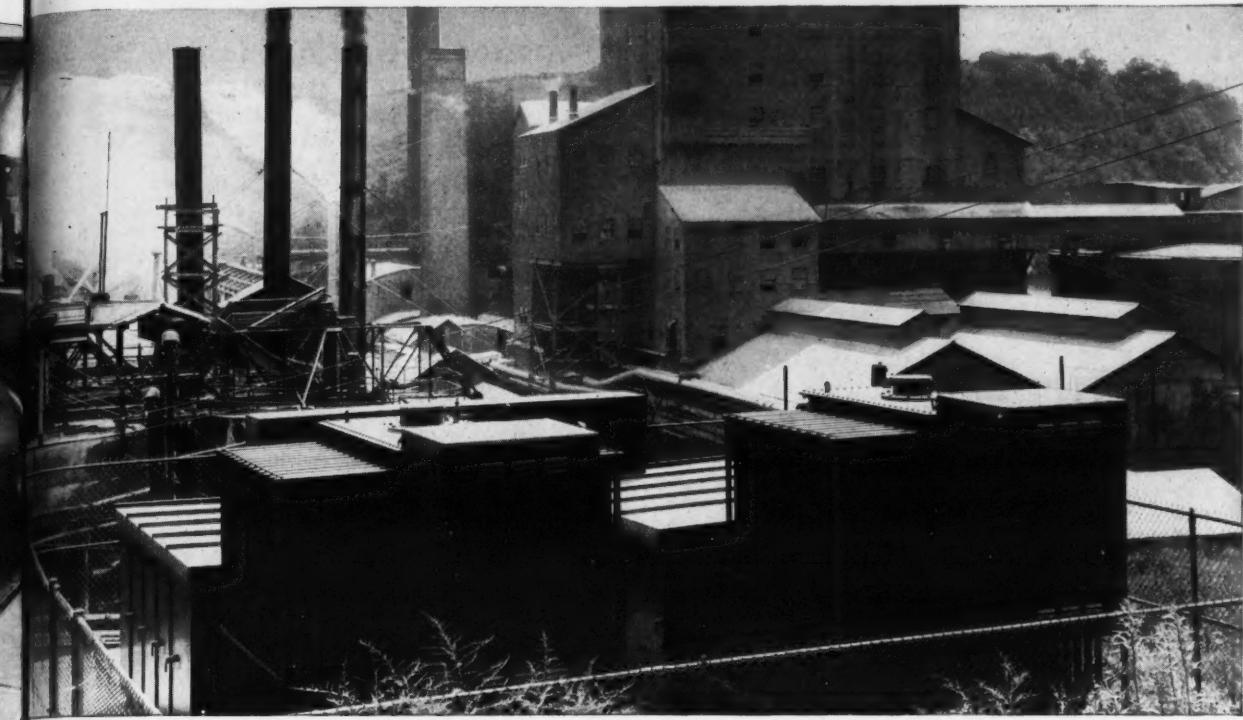
How alkali plant saves 2 ways



COMPACT, METAL-CLAD G-E SWITCHGEAR in power plant at Saltville was easy to install, has saved inspection and maintenance time.



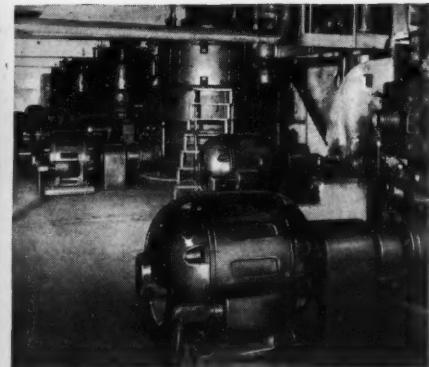
PEAK DRIVE EFFICIENCY in "dry-ice" building is provided by five 2300-v G-E synchronous motors that drive compressors.



TO REDUCE COST of feeders, transformers, and switchgear at Saltville, and to cut power losses, power is distributed at high voltage. Two of

the G-E unit substations in foreground step down 13,800 volts to 2300 volts for plant distribution.

with high-voltage power system



HEAVY DUTY 75-hp Tri-Clad* motors drive coal pulverizers. Typical of many such drives in the plant.

*Registered trade-mark of General Electric Company

Mathieson's Saltville, Va. plant reduces line losses, cuts equipment costs with 13.8-kv power system

Each step in the electrical system of Mathieson's Saltville plant—generation and utilization—takes advantage of high-voltage power distribution.

Electricity generated by turbine-generators at 13,800 volts is distributed to the various utilization areas where it is stepped down in compact load-center unit substations. The need for long low-voltage feeders is ended. Voltage drop is lessened. Plant efficiency is increased. Installed cost

of the plant's electrical system is lower.

Integrating the Saltville plant's power system—planning it to function as one efficient unit—was the job of General Electric system engineers. They can provide the co-ordination you need for highest over-all electrical system performance. Contact your G-E Apparatus Sales representative early. *General Electric Company, Schenectady 5, N. Y.*

662-39

Engineered electrical systems for chemical plants

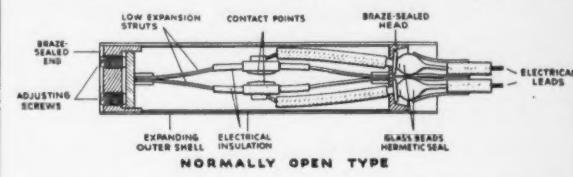
GENERAL  ELECTRIC

When inquiring check CP 3744 on handy form, pgs. 2-3

SAFETY

in drawing. The two fine silver contacts are mounted on, but electrically insulated from, two curved struts that have a low coefficient of thermal expansion. This assembly is mounted under compression, and hermetically sealed, in a tubular stainless steel shell having a high coefficient of expansion.

Temperature changes cause the shell to expand or contract—exerting magnified motion to the contacts, which close the instant the surrounding air reaches the temperature for which the unit is set. The shell is the basic temperature-



sensitive part, and is always in contact with the surrounding air. Some readers will recognize that this principle is the same as utilized in the Thermoswitch, a precision thermostatic unit now being applied to many processes requiring the close control of heat.

Units are available for temperature ratings up to 725°F and as low as 140°F. Models can be obtained for 30 or 125 volts AC or DC. The detectors should be mounted 25 feet from each other, 12½ feet from partitions or walls. Special types are available for extreme conditions of corrosion or moisture.

(Made by Fenwal Incorporated, Dept. CP, 218 Pleasant St., Ashland, Mass. . . or for more information check CP 3745 on handy form, pages 2 and 3.)

Plastic window of hood is now interchangeable . . .

is fastened in place by seven quick-release snaps



Plastic window is interchangeable

Uses: Respirator hood is designed specifically for dust and paint spray protection.

Features: Plastic window is attached to hood by seven snap fasteners. Formerly, the window was sewed permanently to the hood.

Description: The new replaceable window of the No. 75 respirator hood is said to provide a completely unobstructed frontal field of vision in

addition to adequate side vision. Hood itself has two draw-strings which tie under the arms, assuring snug fit. It is reinforced with leather and fits any head due to an elastic strap sewn to back of hood. Hood is available with manufacturer's R2000 interchangeable cartridge and disc filter respirator.

(Product of American Optical Company, Dept. CP, Southbridge, Mass. . . or for more information check CP 3746 on handy form, pages 2 and 3.)

multiple protection for efficient processing

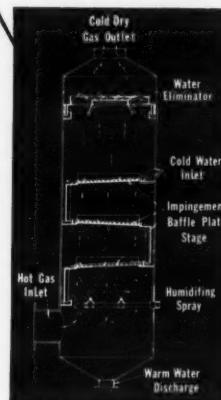
... PEABODY DIRECT FIRED AIR HEATERS

are often called upon to solve, in conjunction with Peabody Burners and Gas Scrubbers, difficult processing problems. These Air Heaters are compact, custom-engineered, and deliver high-temperature, as well as high-pressure, gases for operation at pressure ranges from atmospheric to over eight atmospheres. Available in capacities from 1,000,000 to 100,000,000 B.T.U./hr. For complete details, write for Bulletin 600C. Inquiries welcomed.



... PEABODY SCRUBBERS

alone or in conjunction with Peabody Direct Fired Air Heaters, offer process engineers a wide range of opportunities for solving difficult processing problems and safeguarding both product quality and process economy. Patented Impingement Plate offers positive, controlled scrubbing action with no moving parts. If you have problems of cleaning, cooling or absorbing gases in order to recover valuable by-products, eliminate atmospheric pollution, or improve your processing, look to Peabody for dependable answers. Bulletin 203A available on request.



PEABODY
ENGINEERING CORPORATION
580 FIFTH AVENUE • NEW YORK 36, N.Y.

Manufacturers of all types of combustion equipment, direct-fired air heaters, gas scrubbers, coolers, and absorbers.

OFFICES IN PRINCIPAL CITIES
PEABODY LIMITED • LONDON, S.W.1, ENGLAND

When inquiring check CP 3747 on handy form, pgs. 2-3

SAFETY

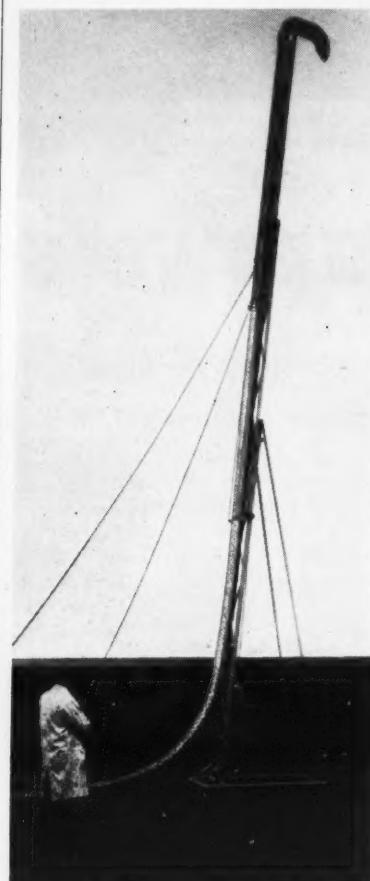
**Portable foam tower
extends up to 50'
in fire fighting . . .**

will discharge 2000 to 3000 gpm of foam within a few minutes

Uses: Protection of gas and oil storage tanks in an area where fixed foam systems are not installed or where such systems may have been damaged by explosion. Such protection is particularly required for the seals of floating roof tanks which as a rule do not carry foam inlets.

Features: Mobility over rough terrain, ease and speed of erection (matter of minutes) by a minimum number of men and large foam volume: 300 gpm water capacity produces 2000 to 3000 gpm of foam.

Description: Pyrene Foam Tower consists of two sections: a flat, rectangular frame base and a telescoping



Can be extended up to 50' to discharge foam over edge of tank

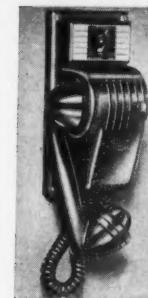
ladder or tower section on which are mounted a foam column and pouring head. Frame base is constructed of num members to which is fixed a screw reinforced 3" channel section alumin-jack tilting gear. Tower is secured
(Continued on page 114)

**IS YOUR OFFICE OR FACTORY
SWITCH BOARD OVERLOADED?**



HERE'S A
QUICK AND
ECONOMICAL
SOLUTION

WHEELER



**Self Powered
ELECTRIC
TELEPHONES**

- Ideal for inter-office, office-to-factory, and interplant services when immediate call and privacy are essential.
- No batteries, no outside power source. No maintenance.
- Up to 12 stations. Bell, gong, horn or visual signals as required.
- No spark or fire hazard. Perfect emergency system.

Write for details and name of nearest distributor.

THE WHEELER INSULATED WIRE CO., Inc.

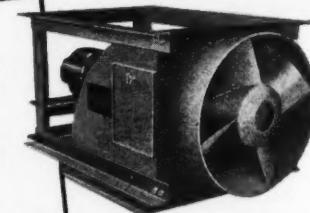
Division of the Sperry Corp.
1112 EAST AURORA ST., WATERBURY 20, CONN.

When inquiring check CP 3748 on handy form, pgs. 2-3

Wing

ELBOW TYPE DUCT FANS

**Delivers
Large Air
Volumes
with Low
Power
Consumption**



Complete range of sizes
from 10 in. to 60 in.; and
from 200 to 85,000 c.f.m.

The Wingfoil Axial Flow Duct Fan, in either elbow type or straight line type, is a compact, economical fan designed to operate against static pressure. The elbow type replaces an elbow in a run of duct, with the motor outside the housing, unaffected by hot or dirty air or gases. Belt or direct drive. Wingfoil "Non-overloading" fan wheel characteristics. Write for bulletin.

L.J. Wing Mfg. Co. 179 Vreeland Mills Road
Linden, New Jersey



When inquiring check CP 3749 on handy form, pgs. 2-3

CHEMICAL PROCESSING

SAFETY

Provides safe and easy method for pouring liquids into smaller containers . . .

designed to prevent accidents and save material loss caused by spilling, splashing and carelessness.

Uses: Transferring liquids from large bottles (as pictured) to smaller containers.

Features: Designed to prevent accidents and save material loss caused by spilling, splashing and carelessness in pouring liquids.

Description: GS Pouring Spout and Tilter is provided with a chain to hold the bottle in position when tilted.



Chain holds bottle in position when it is tilted

Cradle is made of steel, and all members are riveted or welded to insure a strong and durable unit.

Safety air vent pouring spout fits any size bottle and assures a smooth even flow without spouts or splashes. This unit is made of a special acid-resistant rubber and plastic tubing for longer life.

(Available from General Scientific Equipment Co., Dept. CP, 2700 Huntingdon St., Philadelphia 32, Pa. . . or for more information check CP 3750 on handy form, pgs. 2-3.)

Safety control of combustion equipment is housed in one cabinet . . .

flame detector and relay circuit act to stop fuel supply if flame should fail at burner

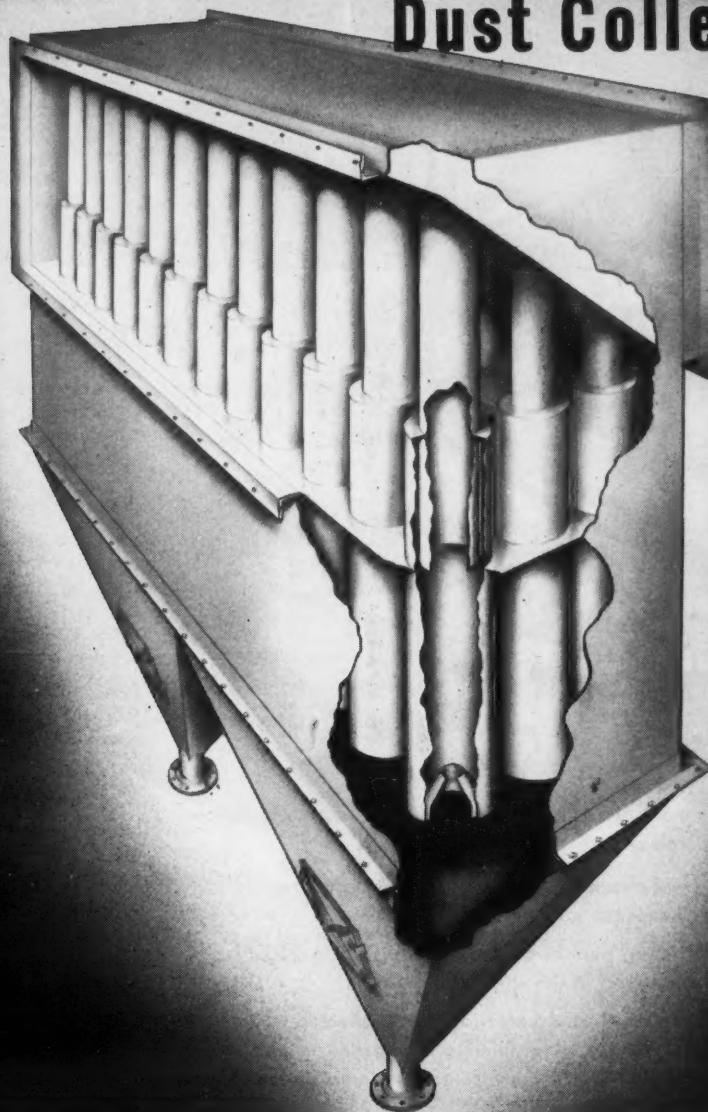
Uses: In conjunction with photocell flame detector in the case of oil-fired burners or with flame electrode detector on gas or gas-piloted oil fired installations.

Features: Multiple burner Protect-O-Glo incorporates the flame rectification combustion safeguard principle. Individual flame detecting relays for each burner is housed in a single cabinet. This cabinet also houses push-buttons, signal lights, and other parts of safeguard equipment.

Description: Standard system handles 2 to 16 burners. Three operating options are: 1) sequence light-off, in which the second pilot valve doesn't open until the first pilot flame has been proved; 2) unison light-off, in which ignition of all burners takes place simultaneously; and 3) independent light-off, in which each burner is individually ignited.

(Product of Industrial Division, Minneapolis-Honeywell Regulator Co., Dept. CP, Wayne & Windrim Ave., Philadelphia 44, Pa. . . or for more information check CP 3751 on handy form, pages 2 and 3.)

For Ultimate Efficiency Type MTSA 9CY18S Multi Cyclone Dust Collectors



"Whirlex" multi-tube cyclone dust and fly-ash collectors are efficient, compact and versatile. They are highly efficient in collecting dust in the lower micron ranges with almost total removal of solids above 325 mesh. The compact cyclone tube units may be grouped in a wide variety of arrangements to permit installations in crowded locations. Gas inlets and outlets may be located in side or top of collectors and angle types are also available. The Fly Ash

Arrestor Corporation manufactures a complete line of low draft loss collectors for installation in stacks and ducts. Highly efficient induced draft fans are made to order together with constant ratio dampers, fly ash injection systems, and overfire air systems. Stacks and necessary connecting duct work are made of heavy welded steel. Proper vaning is provided to reduce turbulence in ductwork. Write for detailed literature and address of your nearest representative.

THE FLY ASH ARRESTOR CORPORATION
BIRMINGHAM ALABAMA

260 North First Street

Telephone 54-6676

When inquiring check CP 3752 on handy form, pgs. 2-3



NYLON Filter Cloth

Again You Can
GET It From Us!

- Select from all standard weaves
- Select from all standard widths
- In roll lengths or less
- As prepared filter element covers
sewed with Nylon thread.

And since you can once more turn to Nylon Cloth, it might be well to review its outstanding filtering values:

- highly resistant to most common alkalies, common organic acids and many other chemicals.
- highly resistant to heat; permissible temperatures up to 250°F; its superiority pronounced in the 200°-250° range.
- unaffected by fungi, molds and bacteria; also unaffected when steam-sterilized making it ideal for filtering food products, pharmaceuticals and other products where contamination is a factor.
- highest tensile strength of all fibers, natural and synthetic; outstanding flex and abrasion resistance factors.
- smooth, non-clinging surface for easy cake discharge.

Before ordering, write us for laboratory test samples to re-check its values for your requirements.



Weavers of Industrial Filter Media for over Twenty Years

The National Filter Media Corp.

General Offices & Mills: New Haven 14, Conn.

Western Office & Factory: Salt Lake City 1, Utah

Sales Offices—Representatives

Chicago, Ill.
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Roselawn Center Bldg.

Houston, Texas
1406 Second National Bank Bldg.

Oslo, Norway
Nicolai Fries

Johannesburg, South Africa
Edward L. Boleman

When inquiring check CP 3753 on handy form, pgs. 2-3

SAFETY

(Continued from page 112)

on rough ground by driving four spikes — each 2' in length — through holes in the corners of base.

Tower section consists of three cross-braced aluminum telescoping ladders which are extended to an elevated position with a manually operated winch. An aluminum foam column, 6" in diameter, is mounted on the top section and held by three securing straps. It is fitted with a heat resistant stainless steel discharge head.

A tilting screw jack mounted on the base permits the discharge head to be moved forward 3 to 5' over the edge of a tank.

Entire unit weighs 475 lb and requires only three or four men for assembly, erection and operation. A 6" hose coupling at the base of the foam column connects the hose line leading up from the ground. The foam is fed to the unit by the use of a forcing type foam maker.

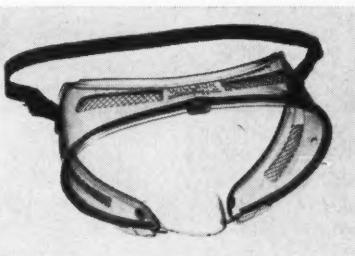
(Manufactured by Pyrene Manufacturing Company, Dept. CP, 560 Belmont Ave., Newark 8, N. J. . . or for more information check CP 3754 on handy form, pages 2 and 3.)

Frame of goggle fits different faces . . .

all-plastic construction retains enough rigidity for safety

Uses: Eye protection. Safety goggle fits over all types of prescription glasses.

Features: Has flexible, transparent frame molded of Vinylite that conforms to different facial contours. However, newly designed lens retain-



ing features add sufficient rigidity to the frame so that there is no sacrifice of protective efficiency.

Description: The 91 MonoGoggle has a replaceable lens of 0.060" acetate. Complete goggle weighs just a little more than an ounce.

(Willson Products, Inc., Dept. CP, Reading, Pa. . . or for more information check CP 3755 on handy form, pages 2 and 3.)

An Investment in Safety...

FUME HANDLING
GALLAHER-AIR VAN

Pat. 2188741 2526290

Exclusive scroll effect design, built in assures you of efficient performance against normally encountered static pressures.

Air-Vans are weatherproof and self contained — shipped to your job site completely assembled, ready to install. You get all the economies of direct connection in a superb low silhouette unit. Air Vans have been built to a standard of rugged dependability. Compare Air-Van material specifications and you'll see the difference.

Performance Ratings CERTIFIED by an independent laboratory.
Cap: 150-1100 CFM: Static Pressures to 1 1/4".

The GALLAHER Company

Omaha, Nebr.

Watertown, Minn.

When inquiring check CP 3756 on handy form, pgs. 2-3

REACH HIGH PLACES SAFELY

A Ballymore Safety Step Ladder provides safe, sure footing in high places wherever you need it, prevents accidents and fear of accident.

Readily portable on ball bearing casters, but can't roll or kick out when supporting a person . . . weight automatically retracts casters, gives firm 4-point grip by rubber-tipped legs.

All steel construction. Three to eight steps with, one to three steps without, hand rails.

► WRITE TODAY FOR
COMPLETE CATALOG

BALLYMORE COMPANY

WAYNE 10, PA.

When inquiring check CP 3757 on handy form, pgs. 2-3

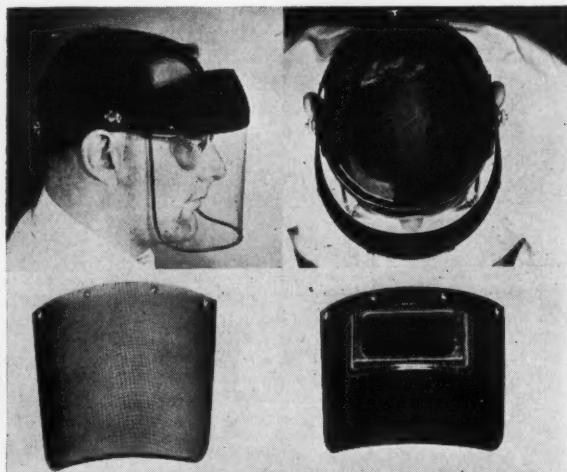
SAFETY

Glasses or goggles may be worn under interchangeable face shields . . .

headpiece adjusts to fit various sizes and shapes
Uses: For general protection of face from heat, flying bits of metal, chemicals, etc.

Features: Protecting visors, provided in three types, are interchangeable on one headpiece and allow sufficient clearance to be worn over glasses or industrial goggles and at same time afford ample ventilation.

Description: Model 301 face shield provides for visor to be glove-buttoned to a form-fitting head gear which is readily adjustable to any shape or head size. Shields avail-



Detachable shields are available in three types

able are: 1) plastic for general utility, 2) fiber front with glass holder for gas welding, 3) screen window for scaling, heat, cyaniding, etc.

(Available from Safety Division, The Boyer-Campbell Company, Dept. CP, 6540 St. Antoine St., Detroit 2, Mich. . . or for more information check CP 3758 on handy form, pages 2 and 3.)

Restricted areas are plainly visible when marked with colored polyethylene rope . . .

lightweight and chemically resistant, barrier rope warns workers of hazardous regions.

Uses: For marking of restricted, hazardous areas in chemical plants for protection of workers.

Features: Resists chemicals, and through use of any one or a combination of five colors available barrier rope has high visibility.

Description: Made of polyethylene, barrier rope resists acids, alkalis, mildew and rot; measures $\frac{1}{4}$ " diam, weighs 1 lb per 90 feet. It is being offered in red, white, black, yellow, or olive drab, or in desired combinations of these colors. A combination of black and a high-visibility yellow are reported to make the most satisfactory color for safety barrier rope use. Rope is made of wholly un-drawn filaments to obtain high elongation, thereby discouraging use of rope for purposes other than as a barrier marker.

(Development of Plymouth Cordage Co., Dept. CP, Plymouth, Mass. . . or for more information check CP 3759 on handy form, pages 2 and 3.)



THE NEW DOUBLE-FLOW AQUATOWER

50 tons or more capacity

The only complete line of "packaged" water cooling towers is the AQUATOWER line.

In the 2 to 6 ton range, Marley offers Model 23 and 33 Aquatowers —small, compact units that soon pay

for themselves in any service requiring as little as 6 gpm.

For intermediate capacities, you can choose from 8 standard size Aquatowers that fit any cooling requirement in that capacity range, indoors or out.

On jobs requiring 50 or more tons of refrigeration, Marley offers the NEW DOUBLE-FLOW AQUATOWER, the lowest silhouette, lowest pumping head tower.

In this newest cooling tower, one fan utilizes air from two completely open sides, combining great efficiency and power economy.

Aquatowers in all sizes conform to building codes. Small and medium-sized units are shipped completely assembled and Double-Flow Aquatowers are prefabricated for ease of construction.

For complete information, call the Marley representative in your city or write for Bulletin AQ-52.



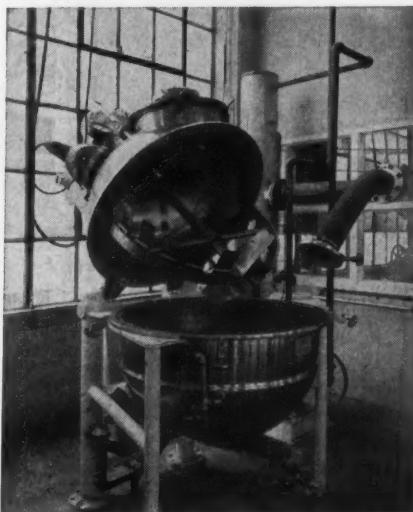
The Marley Company, Inc.

WORLD'S LEADING PRODUCER OF WATER COOLING TOWERS

Kansas City 5, Missouri

When inquiring check CP 3760 on handy form, pgs. 2-3

GREATER UNIT CAPACITY with BUFOVAK-DOPP PROCESSING KETTLES



A hinged cover, supporting the drive and agitator, gives complete accessibility to this BUFOVAK Stainless Steel Processing Kettle.

- * For the profitable and better processing of many Chemical, Food, Pharmaceutical and Grease Products.
- * Available in many types, materials of construction, and sizes, to meet specific requirements.
- * Designed to perform the important function of thorough mixing with the minimum power consumption, BUFOVAK-DOPP Kettles process a better, more uniform product, at lower production cost.
- * Heating surfaces can be kept continuously free from accumulated material by special scraping agitators.
- * Safe, quiet, and dependable operation is insured by completely enclosed drive units equipped with roller bearings. Cut bevel gears operate in bath of oil.
- * Greater unit capacity . . . an increase in heat transfer . . . substantial savings in power . . . through mixing . . . and the complete discharge of processed batches, are benefits resulting from exclusive features in the design and construction of BUFOVAK-DOPP Kettles.
- * The BUFOVAK Demonstration and Testing Laboratory is equipped to process a small quantity of your material to determine the type equipment and accessories that will give you the most efficient results.
- * Write for complete information.

BUFOVAK EQUIPMENT DIVISION

of Blaw-Knox Company

1579 Fillmore Ave.

Buffalo 11, N.Y.

Processing Equipment

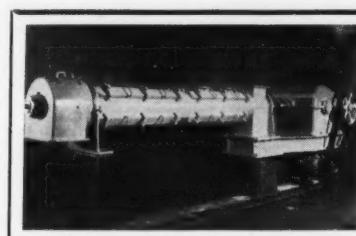
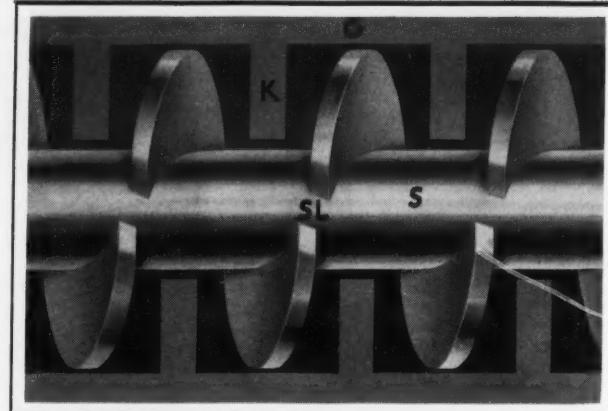


Figure 2—Type K closed trough construction for mixing and kneading plastic masses and heavy chemicals such as welding rod coatings, carbon electrodes, pottery, cement, and soaps. Also used for special operations in the pharmaceutical and chemical industries and for processes that involve washing and reaction. Standard equipment includes heating or cooling jacket. Capacities are up to 11,000 lb/hr

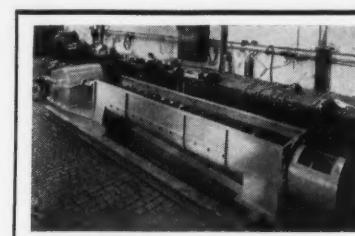


Figure 3—Type M open trough construction for mixing dry and semi-plastic materials such as foundry sands, soap powders, chemicals, and ceramics. Capacities range up to 700 cfm

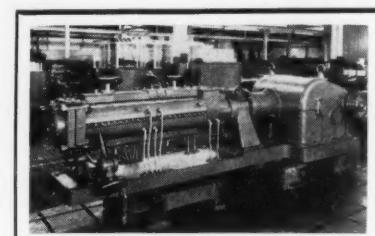


Figure 4—Type P closed trough construction for heavy mixing and kneading of extremely viscous materials such as linoleum chloride, polystyrene, cellulose acetate, polyethylene, and phenoplasts. Also employed for mixing and masticating rubber and the dispersion of colors in varnish. Heating or cooling jacket is standard. Capacities are up to 3500 lb/hr

Intense Blending and Dispersing Action Assures Rapid, Continuous Kneading and Mixing

USES: Continuous kneading and mixing of a wide range of materials, ranging from semi-dry and semi-plastic masses to plastic masses of extremely viscous materials. Exceptionally fine dispersion, such as those used by the paint and color industries, can also be produced.

Features: Mixing operation is thorough and rapid. Each component of a mix is uniformly blended with the others, even the smallest particles of any material are wetted uniformly, and excellent dispersion can be obtained. In applications where solvents are used, solvent evaporation loss is minimized because of the rapid mixing possible. Loss of material as scrap resulting from charging and discharging conventional batch equipment is largely eliminated.

When suitable accessory equipment is installed, such as feeders, operation can be considered as almost completely automatic. One worker should be on hand for casual inspection of operation, and one or two workers

Machines handle semi-plastic to highly viscous materials, will operate practically automatically, minimize material loss

may be needed occasionally for cleaning and maintenance. Split-casing design, however, simplifies cleaning operation because it makes internal portions of machine readily accessible. In addition to this, machine is largely self-cleaning because most of the material is automatically ejected.

Description: Basically, the "Ko-Kneader" is a worm (S in Fig 1) revolving in a trough (G). Each blade on the worm has gaps (SL) at regular intervals that correspond to kneading teeth (K) in the trough. The worm is operated by a driving gear that produces an axial reciprocating motion as well as the rotary motion. This horizontal reciprocating motion is so coordinated with the rotary motion that the gaps meet and pass the kneading teeth as the worm revolves. Each kneading tooth and blade of the kneading worm could be considered as a small mixing and kneading machine by itself. Material is fed into the trough of the Ko-Kneader (special feeders are available) and is forced forward by the

worm blade until it comes to a kneading tooth. As the blade passes the tooth, it forces a part of the material with it and leaves part behind for further processing. This process is repeated along the entire length of the trough, assuring thorough and intense blending.

This type of mixing motion permits adding the various ingredients of a mix in "shots" rather than in a continuous stream . . . and still have a uniform mixture at the outlet of the unit.

Ko-Kneaders are of heavy-duty iron and steel or stainless steel construction, are compact and simple to install. They are built with various zones on the outer casing for heating or cooling, and the kneading worm is cored for circulation of a heating or cooling medium. Probe type thermocouples can be inserted through the kneading teeth and connected to suitable instrumentation for automatic control of temperature.

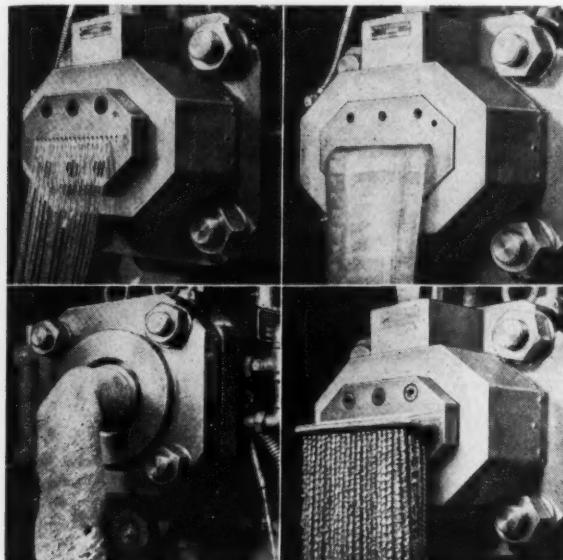


Figure 5—Illustrates various types of extrusion heads that can be used with the Ko-Kneader

The machines can be modified to adapt them for a wide variety of processing operations and materials. By changing the number and shape of the kneading teeth to suit the material being processed, for instance, practically any desired result can be achieved. Hourly output and staying time can be controlled by 1) changing counter pressure (the pressure acting against the normal flow of material through the unit), or 2) adjusting the axial stroke of the worm.

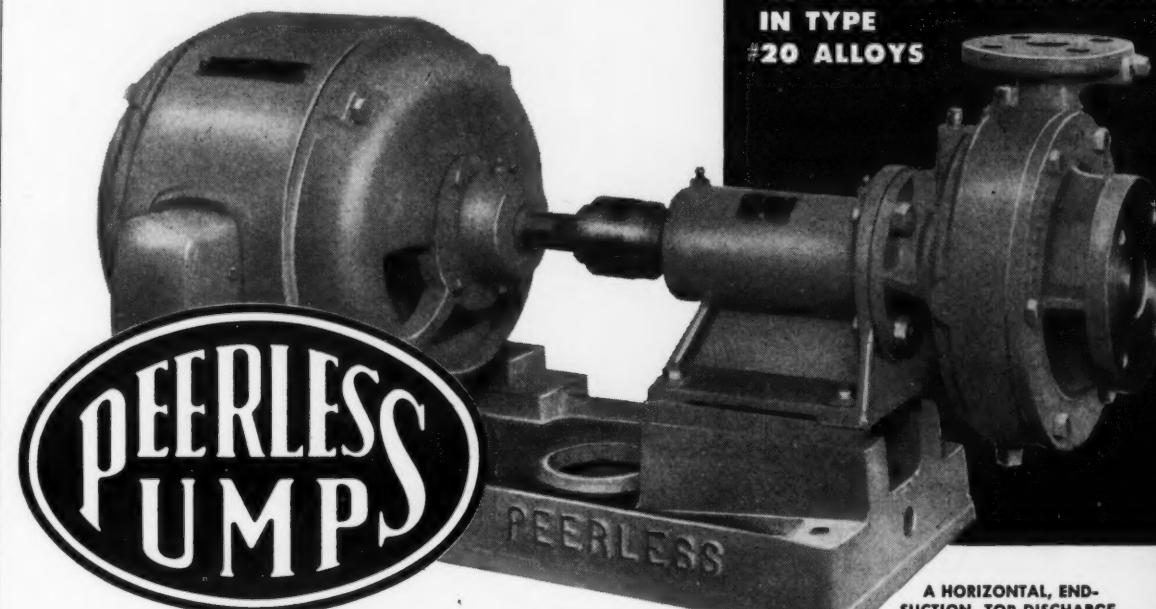
Various types of extrusion heads can be fitted onto the outlet of the machine. Some of them are shown in Figure 6.

(The Ko-Kneader, an invention of Heinz List, is available from Baker Perkins Inc., Dept. CP, 1000 Hess St., Saginaw, Mich. . . or for more information check CP 3762 on handy form, pages 2 and 3.)

Since January 1952, CHEMICAL PROCESSING has come to you with additional departments, helping you to find and read topics of your greatest interest.

PEERLESS **CTB** type **CTB** CHEMICAL TRANSFER PUMP...

For continuous or intermittent
light duty in transferring
process chemicals



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Since the Type CTB chemical transfer pump is designed with and for a mechanical shaft seal and the stuffing box is eliminated, the Type CTB pump has less shaft overhang, reduced bearing loads, less run-out at the seal. This design also effects a sizable reduction in both pump and seal costs. The seal is Peerless' own design and construction and is available from stock.

SEMI-OPEN IMPELLER WITH REPELLING VANES ON BACK SHROUD EASILY PUMPS SOLUTIONS CONTAINING SUSPENDED SOLIDS

The non-clogging characteristics of the open impeller design used in the Type CTB pump assures maximum abrasive and slurry handling abilities. The action of the repelling vanes not only minimizes recirculation losses but reduces pressure on the shaft seal, providing optimum seal performance.

You can buy and apply this ruggedly-built transfer pump with the confidence that you'll get low operational costs and long "in service" continuity.

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Featuring:

MECHANICAL SEAL
DEPENDABILITY
RUGGED CONSTRUCTION
QUALITY MATERIALS
QUICK MAINTENANCE
LOW INITIAL COST AND
AVAILABILITY FROM STOCK
IN TYPE
#20 ALLOYS

A HORIZONTAL, END-SUCTION, TOP DISCHARGE, VERTICALLY-SPLIT CASE CENTRIFUGAL PUMP

CAPACITY RANGE:	10 to 250 gpm
HEAD RANGE:	10 to 140 feet
HP RANGE:	1/4 to 10 hp
CASE PRESSURE:	100 lbs.
LIQUID TEMPERATURE:	Up to 250°F
MATERIALS OF CONSTRUCTION:	Frame—cast iron Liquid End—Type No. 20 Stainless steel alloy

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FOOD MACHINERY AND CHEMICAL CORPORATION

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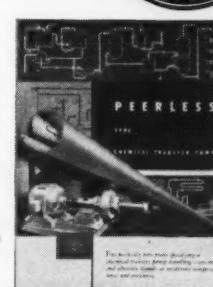
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No. B-1606.

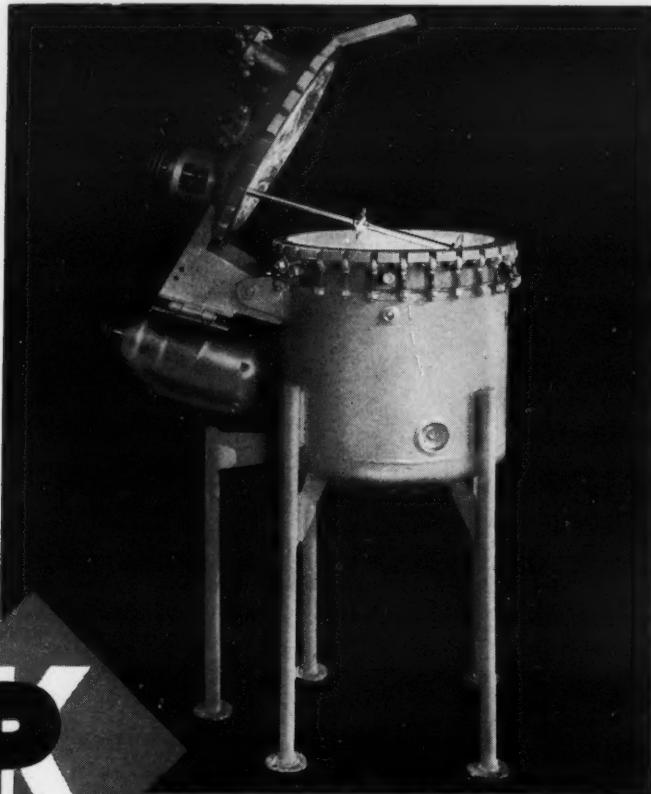
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COOKED UP THIS COOKER . . . WHAT CAN WE COOK UP FOR YOU?



p-k will design and make any tailored or standard pressure cooker or any similar piece of process equipment to your exact specifications.

The pressure cooker shown is typical of **p-k** designing and manufacturing ability to meet specific requirements for specific processing operations. It is a stainless steel jacketed unit, with No. 4 polish inside, designed for 50 lb. pressure on both sides to meet ASME standards. The cover with an integral double-propeller agitator, is counter-balanced for easy cleaning and loading.

No matter whether your present needs are for a kettle, agitator, or any type of pressure vessel, **p-k** will work out an answer for you. Write **p-k** today—for specific design assistance or for more complete information.

Mixers • Coolers • Kettles • Agitators
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*Patented



the Patterson-Kelley Co., Inc.

370 Lackawanna Ave. East Stroudsburg, Penna.

When inquiring check CP 3764 on handy form, pgs. 2-3

PROCESSING EQUIPMENT

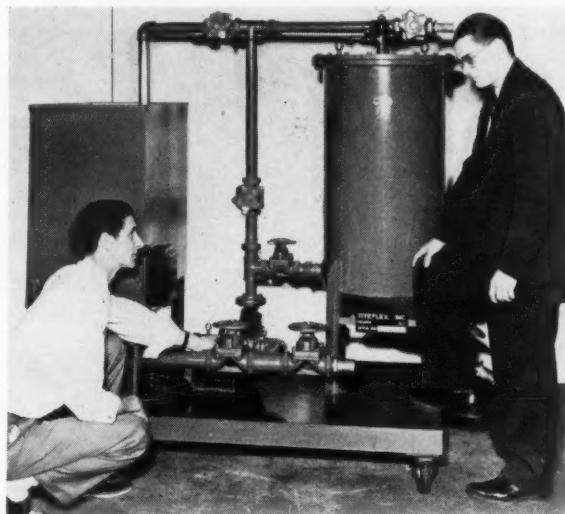
Well-screen element employed in clarification filter . . .

cleaning is fast — cake is dislodged, then reslurried by spray for easy discharge

Uses: Clarifying liquids ranging from corrosive acids to viscous soap solutions.

Features: Cleaning is accomplished in a matter of minutes by backwashing at pressures up to 100 psi. Dislodged cake is broken up by a spray, making it unnecessary to remove the cake manually; it is washed out as a slurry.

Description: These filter units incorporate well-screen elements and are made in standard models with capacities from 400 to 10,000 gph. Special models are available to



Clarification filter has well-screen element

meet user's requirements as to linings, filter chamber materials, and capacity. Each filter is fitted with the correct pump for the specific operation in which it is to be used. These filters may be purchased or rented.

(Made by Titeflex, Inc., Dept. CP, Newark, N.J. . . or for more information check CP 3765 on handy form, pages 2 and 3.)

Teflon sheets and tape for filtering and sifting chemicals . . .

material is impervious to all acids, alkalis, and solvent except molten sodium and fluorine

Uses: For filtering and sifting corrosive chemicals. Perforated Teflon may be used in single or multiple thicknesses according to filtering or sifting problem.

Features: Teflon is impervious to acids, alkalis, and solvents with exception of molten sodium and fluorine. Material is said to be tough, resilient, and cannot contaminate any material in process.

Description: Tape thicknesses range from .005 to .05" and are available in continuous lengths 12" wide. Hole sizes range from .020 to .062". Number of holes per square inch varies between 74 and 952. Sheets $\frac{1}{8}$ " thick and up are available to 24" square with holes .045" and up.

(Product of United States Gasket Company, Dept. CP, Camden, N. J. . . or for more information check CP 3766 on handy form, pages 2 and 3.)

Report slurry mixer speeds
mixing of dry materials
into liquids . . .

hopper feeds at pressures, rates
according to tests of materials

Uses: For mixing materials such as celite and water, borax and glycol, lactose and water, clay and oil, carbon black and water or oil, and napalm with gasoline. Used for clarification of liquids, pre-coating of filters.

Features: National Slurry Mixer is reported to accelerate and simplify mixing of dry materials into liquids. Initial cost is said to be relatively small and unit requires very little maintenance. Dusting is reduced by special hopper or feed construction.

Description: Operating basically on Venturi principle, mixer has no moving parts. Hopper feeds powder into liquid at rates and pressures predetermined by tests of materials used.

Mixer wets all particles to create homogeneous mixture. Liquids can be handled at almost any temperature, since only limitation is metal of mixer, which is usually brass. Units are readily portable. Inlet and outlet can be fitted with threads, flange or swivel.

In normal practice, one mixer can introduce from 10 to 200 lb of dry material per minute into similar number of gallons of liquid. Two or more single or double units can be manifolded to introduce two or more materials in any desired proportion.

(Product of National Foam System, Inc., West Chester, Pa. . . . or for more information check CP 3767 on handy form, pages 2 and 3.)

Describes mixer for viscous materials

Four-page bulletin discusses mixer made for compounding of difficult, tenacious ingredients. Full explanation and illustrations of machine are presented. Table lists wide variety of charging, driving, and mounting arrangements in different sizes.

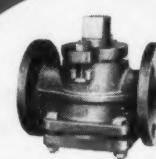
Other lighter duty types for mixing, dispersion, or kneading are covered in brochure. Range in working capacity is from 1 through 1000 gal. Bulletin T-452 is issued by Struthers Wells Corp., Mixer Division, Dept. CP, Titusville, Pa. When inquiring specify CP 3768 on handy form, pages 2 and 3.

For more information on prod-
uct at right, specify CP 3769
see information request
blank between pages 2-3.

Write

for reasons why DURCO
equipment—in DURCO alloys—
works better, lasts longer,
solves your corrosion problems

These DURCO products are representative of the DURCO family of engineered equipment. All are designed to operate at peak efficiency and are manufactured in special DURCO alloys to withstand severe corrosion.



Durco F Valve. Non-sticking, non-lubricated. Teflon sleeve eliminates metal-to-metal contact. Highly satisfactory in toughest chemical service. Sizes: $\frac{1}{4}$ " through 2".



Series R Durcopump. A heavy duty centrifugal pump for severe corrosive service. Available with interchangeable wet end parts in special Durco alloys for most corrosive conditions.



Duriron Acidproof Pipe. Highly resistant to almost all commercial acids at practically all concentrations and temperatures. Installed by usual plumbing methods as permanent lines.



Durco Heat Exchangers. Simple and efficient units for heating or cooling corrosive liquids. Designed for flexibility in mounting. Available in several DURCO alloys.



DURCO Exhaust Fans can be obtained in sizes, drives and capacities to meet most requirements. Available in Duriron and Durichlor.



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 Bulletin M7/1103—Fans
 General Catalog 53

Name..... Company..... Title.....

Address..... City..... State.....

Fabrics are serviceable with hot, corrosive materials . . .

can be used at operating temp up to 300°F.

Uses: With dust collectors and in dry separation equipment.

Features: Fabrics are suited for use with hot, corrosive materials. Can be used at operating temperatures up to 300°F. Materials are said to resist chemical attack by strong mineral acids, chlorine, other oxidizing chemicals, common solvents, oils, and weak alkalis.

Description: High strength of Orlon fiber's permits use of lightweight fabrics with short-staple, highly-napped construction. This is said to give maximum air permeability, plus retention of wide range of particle sizes.

Materials are available as yard goods or tailored into bags or tubes so that they will fit any type of dust collecting equipment.

(Product of Filtration Fabrics Division, Filtration Engineers, Inc., Dept. CP, 155 Oraton St., Newark 4, New Jersey . . . or for more information check CP 3770 on handy form, pages 2 and 3.)

Quick screen change is for electric heaters . . .

makes replacement as easy as on unheated screens

Uses: To facilitate cloth changes necessitated by product diversification and replacement of worn screens on electrically heated screen installation. Attachment is applicable to all makes of screens on both new and existing electric screen heater installations used to eliminate blinding and speed screening of moist clay, rock products, coal, ores, chemicals.

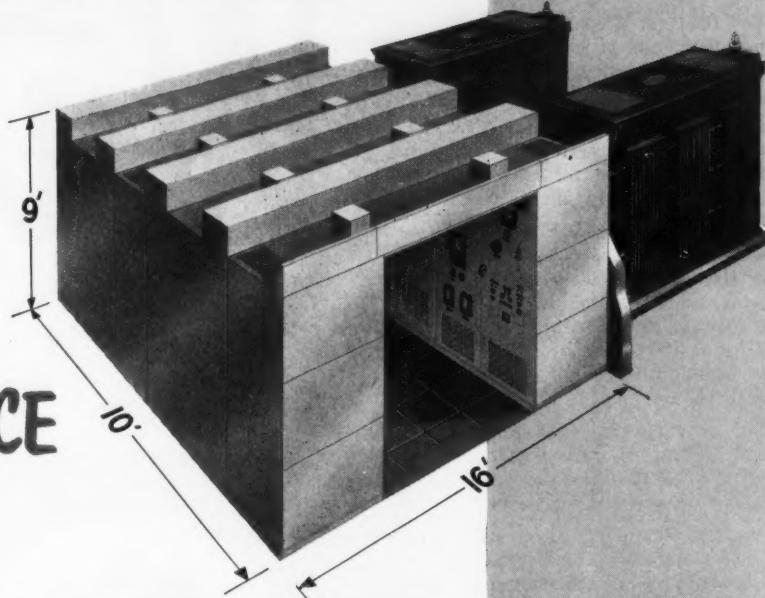
Features: Makes cloth changes as easy and quick as they are on unheated screens.

Description: With Quick-Change attachment, copper distribution bars are bolted to the skirtboard, to the side tensioning rail or under the cloth, to make positive, direct contact with the screen. Such construction eliminates current losses suffered when steel assemblies are used to carry the current.

Feature described insures against weak or broken contacts due to rusting where steel materials are part of the circuit and allows complete shielding of the copper distribution

RECTIFY AC TO DC WITH 96% EFFICIENCY

**...IN SMALL,
COMPACT SPACE**



Install I-T-E MECHANICAL RECTIFIERS

On processes requiring a heavy, steady supply of direct current, I-T-E Mechanical Rectifiers yield big dividends. Not only do they give you more d-c for the power you buy (96% efficiency from a-c line to d-c bus) but you also get more power per cubic foot — *high capacity in small space*.

SAVE SPACE

Simplicity of design plus unified arrangement of steel enclosures assures most economical use of floor space. The 10,000 ampere I-T-E Mechanical Rectifier pictured here requires a *total floor area of only 160 square feet including operating aisle*. A 5,000 ampere installation requires only 120 square feet including aisle. Ceiling need be no higher than 12 feet.

Power transformers are normally located outdoors and throat-connected to the Rectifier cubicle through an outside wall. Overall dimensions vary with KVA and ratio of the transformer. A 1000 KVA transformer nominally occupies 35 square feet.

The primary a-c circuit breaker which feeds the transformer forms part of the Rectifier

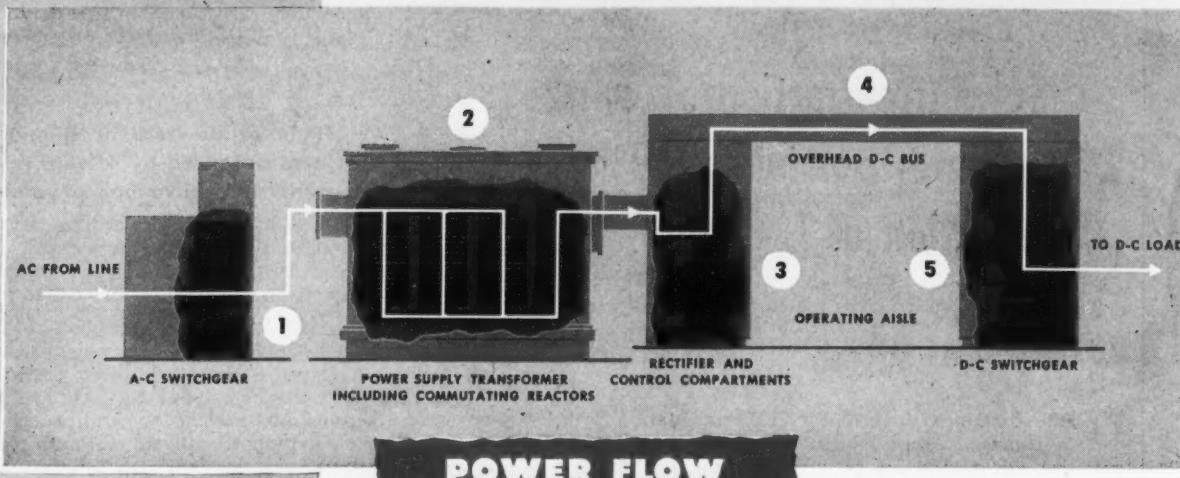
installation, but is ordinarily included in a line-up of HV switchgear at some convenient remote point. A 5 KV circuit breaker, 100,000 KVA interrupting capacity, 1200 amperes continuous rating (draw-out construction), occupies 10 square feet of floor space.

SAVE ON BUILDING COSTS

The compact Mechanical Rectifier installation is light in weight. It requires no special floors, foundations, or high ceilings—no basement or trenching for buses. The Rectifier stands just 9 feet tall—including *overhead bus*—on an ordinary level floor.

SAVE ON INSTALLATION COSTS

Factory assembled, wired, and tested, the I-T-E Mechanical Rectifier is delivered as a packaged unit—ready to install. No special equipment or crane facilities are needed. Just unload components, skid enclosures into position, wheel truck-mounted elements into cubicles, connect . . . and the Rectifier is ready to deliver long, dependable service.



POWER FLOW
FROM A-C LINE TO D-C LOAD

A complete I-T-E Mechanical Rectifier includes: primary a-c circuit breaker, transformer, commutating reactor, contact mechanism, d-c switchgear, and associated instruments and controls.

Incoming alternating current is fed through primary circuit breaker (1) into the combined transformer and commutating reactor (2), to the contact mechanism (3), where it is converted to direct current.

The direct current then travels across the overhead bus (4), through d-c switchgear (5) to feed the load.

CAPACITY RANGE

Standard ratings for unit installations are: 3000, 4000, 5000, 6000, 7000, 8000, 9000, and 10,000 amperes. Any additional desired capacity may be obtained by paralleling units of suitable ratings.

Output voltage may be any voltage between 50 and 400 volts d-c.

Common primary voltages are: 2300 volts; 4160 volts; 13,800 volts; and 23,000 volts; three-phase, 60-cycle, a-c.

GET THE COMPLETE STORY

If you're planning new or expanded power conversion facilities, it will pay you to investigate the advantages of I-T-E Mechanical Rectifiers. You get maximum efficiency—in minimum space. You save all along the line.

For complete information, get in touch with your local I-T-E representative without delay. Or, send for illustrated *Bulletin 5106* today.

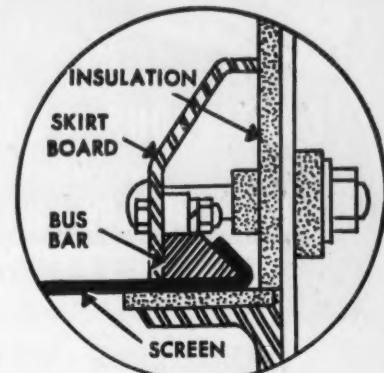
MECHANICAL RECTIFIERS

I-T-E CIRCUIT BREAKER COMPANY

Rectifier Division

19TH AND HAMILTON STREETS, PHILADELPHIA 30, PENNSYLVANIA

Canadian Mfg. and Sales: Eastern Power Devices, Ltd., Toronto • Export Sales: Philips Export Corp., N.Y. 17, N.Y.



Quick screen change for electric heaters

bars against abrasion, permitting complete insulation with a minimum of material.

(Development of F. R. Hannon & Sons, Dept. CP, Canton 7, Ohio . . . or for more information check CP 3771 on handy form, pages 2 and 3.)

**Shows varied application
of multi-louvre dryer**

Detailed information on drying, cooling, and processing bulk materials is provided in 24-page booklet. Discussion covers operation of multi-louvre dryers and also provides typical layouts of unit, and dimensional data, as well as a two-page psychrometric chart.

Descriptive material surveys basic principles of heat drying.

Dryer is used by chemical process and fertilizer industries for materials which require fast treatment and accurate temperature control. According to report, the chemical industries use dryer for treatment of ceramic materials, plastics, acetates, and other synthetics, and for cooking soybean and cottonseed flakes, flaxseed, and copra. Equipment is serviceable as dryer and cooler in fertilizer industry.

Action of dryer keeps the material in motion and does not allow it to set for any period of time. Accurate temperature control facilitates cooling of potash, nitrogen, phosphate and other materials.

Booklet 2409 is issued by Link-Belt Company, Dept. CP, 307 N. Michigan Ave., Chicago 1, Ill. When inquiring specify CP 3772 on handy form, pages 2 and 3.

For more information on product at left, specify CP 3773
see information request blank between pages 2-3.





Streamlined flow of steam, air, oil, etc., around the inner valve is an immediate solution to the important need of dependable control under varying loads.

Continuous processes can be dependably protected against slow downs, failures, and maintenance ordinarily due to valve inefficiencies. The STREAMLINED "1000" Valve with ample capacity, tight closing characteristics, close delivery pressure control, and with a wide range of adjustment makes possible speedier production, smooth operation and no spoilage.

You get straight line flow which eliminates turbulence so that at all times you are easily able to meet peak demand and yet hold the reduced pressure constant at the same time. For the complete facts write for Bulletin "1000."

"The two CASH STANDARD Type '1000' pressure reducing valves that we use have, since their installation, GIVEN PERFECT OPERATION WITH NO MAINTENANCE."

—from a Laboratory

Maximum Capacity When Needed Most • Accurate Pressure Control Under Toughest Working Conditions • Trouble-Free Service • Smooth Operation • Tight Closure • Accurate Regulation • Speedier Production Results • Elimination of Failures • Constant Delivery Pressure • Cost Saving Operation • No Spoilage • Practically Zero in Maintenance Costs

CASH STANDARD
CONTROLS...
VALVES

WRITE FOR BULLETIN 962

A. W. CASH COMPANY
DECATUR, ILLINOIS

When inquiring check CP 3774 on handy form, pgs. 3-4

Construction & Maintenance

High grade sodium phenolates produced by solvent regeneration have market value

Solvent extraction of wastes indicates possible 99.9% reduction of phenols

DATA obtained in laboratory experimentation with a counter-current solvent extraction process indicate that the method can be of economical and efficient service in treating phenolic-bearing, refinery waste materials. A feature of note is that in solvent regeneration, a marketable by-product is produced — sodium phenolate.

Phenolic waste materials are one of the chief concerns of refiners employing fluid catalytic cracking operations. The process accumulator waters from the cracking step contain not only the undesirable phenolic materials, but considerable quantities of ammonium polysulfides. Presence of the latter either prevents the use of normal methods of phenol reduction or makes such use too costly. Such problems led to an investigation of phenolic material reduction methods by solvent extraction.

Equipment used in the experiment was a Scheibel multi-stage, fractional liquid-liquid extraction unit for operation with gravity feed. Principle of operation involves countercurrent flow of solvent and waste which are mixed by motor driven paddle wheels having wire gauze settling spaces or zones between each. A mixing and settling zone is classified as on-stage treatment.

Solvent enters near the bottom of the extractor and the phenolic waste near the top. Spent solvent leaves from the top of the extractor and the phenol-reduced waste from the bottom. Separation effected is due to the difference in specific gravities of the solvents and phenolic waste water. Flow rates of both solvent and waste water are controlled by use of needle valves and rotameters.

Initial experiments demonstrated that the presence of ammonium polysulfides had no effect upon the solvent extraction procedure for fluid catalytic cracking wastes. After the determination of this fact, the investigation proceeded as to solvent type, solvent ratios, required stages, solvent regeneration, and solvent losses.

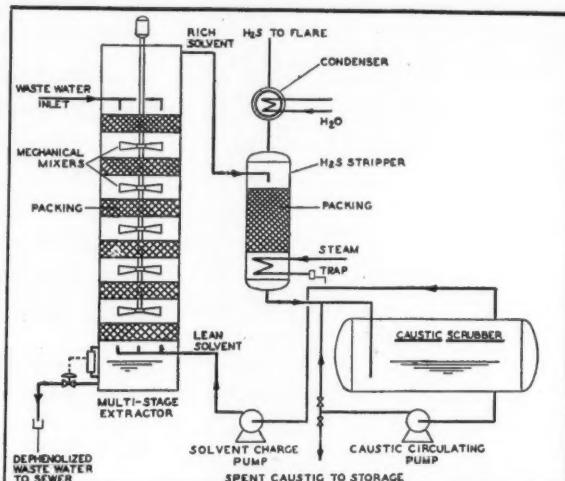
Experimentation proved that mixtures of paraffin and aromatic hydrocarbons were the most advantageous from the standpoint of cost, commercial availability, specific gravity, and solvency power. It was also shown that the higher the aromatic content, the greater the efficiency of extraction.

Where a one to one ratio of solvent to water was used and where the percentage of aromatics ranged from 100 to 49%, a five-stage extraction system effected phenolic reduction of 90% or better. With a smaller aromatic concentration, higher solvent to water ratios and increased number of stages were necessary to produce comparable results.

Solvents regeneration was accomplished, as mentioned before, by scrubbing with a caustic solution. Solvent

losses were determined by solvent type and process flow rates. The more paraffinic the solvent, for example, the less would be the solvent loss through solution in the waste water, and conversely. Also, the more rapid the flow rates, the greater the amount of carry-over of solvent by waste or waste by solvent.

Results obtained in the study indicate a possible reduction of 99.9% of accumulator wastes originally containing 200 ppm of phenols. This operation would require a five stage extraction column plus a mixed solvent consisting of 66% benzol and 34% fluid catalytic cracked gasoline used at a ratio of 2 parts solvent to 1 part waste water.



Amounts of caustic consumed depend upon the phenol concentration of the waste, amount of waste and percentage of removal. As mentioned in the opening paragraph, the spent caustic consists of high grade sodium phenolates which have a market value to various chemical companies for the phenol content. These companies usually recover the phenol by acidification with acids, acid salts, carbon dioxide or hydrogen sulfide.

A typical flow-diagram of an industrial installation of phenol reduction by extraction is shown in the accompanying figure. Since the flow of waste and solvent is continuous and adjustable, the equipment may be adapted to various rates and ratios.

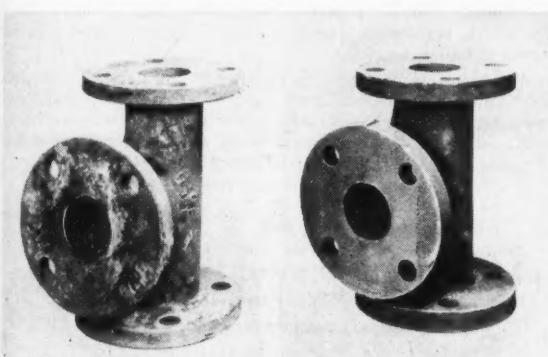
(From a paper presented by James A. Biehl, The Ohio Oil Co., Dept. CP, Robinson, Illinois at the Seventh Annual Industrial Waste Conference)

**Destroys rust, retards corrosion
and promotes adhesion of
paints and lacquers . . .**

report from Technical Director, Octagon Process Inc. on dual-purpose product

A combination treatment which cleans metallic surfaces of rust, scale, light oils and grease films, and retards corrosion at the same time is the accomplishment of Rustclean. It is a special type cleaner, incorporating a mild acid and various solvents and detergents, which chemically cleans the surfaces of such metals as iron, steel and aluminum; it also removes tarnish from copper and its alloys, and brightens stainless steel.

In information contributed by Norman Kuperschmid, Technical Director, Octagon Process Inc., it is pointed out that, in addition, Rustclean forms a phosphate coating which acts as an excellent base for paints and lacquers. If a subsequently applied paint film is exposed



Before and after pictures of pipe tee subjected to treatment with dual-purpose cleaner

to a moist atmosphere, the phosphate surface acts as a safeguard against chipping or peeling of the paint. Also, this inert phosphate film prevents the spreading of rust under the paint coating.

Several types of Rustclean are available, each designed for different work. Two standard types are Rustclean 12 and Rustclean 15. Rustclean 12 is designed for a wipe-on process for large parts as in the maintenance of storage tanks, processing machinery, petroleum equipment and pipelines, and large architectural tanks.

Rustclean 15 is a more concentrated compound which is used in an immersion process in a stainless steel vessel (recommended for use at elevated temperatures) or tank lined with rubber, polyethylene or asphalt. It is most effective when used at a temperature about 160°F. This immersion process of de-rusting equipment assures chemical action of the solvent on internal as well as external surface areas.

For the wipe-on process, Rustclean 12 is normally diluted with three parts of water and applied with a sponge, brush, or cloth. However, when heavy rust is encountered, dilution with only one part of water is recommended. Depending on the depth of corrosion, rust will be removed in a period varying from one minute to a half-hour. Along with light oils, light surface rust can be wiped directly from the surface.

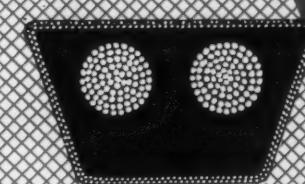
Since Rustclean does not fume, no corrosive or toxic vapors are released into the atmosphere. Therefore, there is no danger to equipment or personnel located in the immediate vicinity. No exhaust systems are needed to carry away noxious vapors.

(A product of Octagon Process Inc., Dept. CP, 15 Bank St., Staten Island 1, N. Y. . . or for more information check CP 3775 on handy form, pages 2 and 3.)



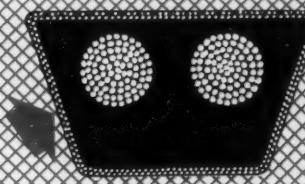
Resist Oil, Weather, Chemicals

Neoprene is used in *Super-7* High Capacity Belts for extra protection. Result — a strong, tough belt for use inside or out under adverse conditions.



Eliminate Static Accumulations

Super-7 High Capacity Belts are made with a special rubber compound. This permits flow of static electricity throughout the belt to properly grounded sheaves.



40% more Pulling Power

Built for the tight spots where you may want to cut the number of sheave grooves . . . or the tough spots where for some reason ordinary belts fail.



Note Before Ordering

Super-7 High Capacity V-belts are available in all standard sizes and lengths. Since this is a special purpose belt, be sure to talk over your drive problem with an A-C man to avoid misapplication. Call your nearby Allis-Chalmers distributor or district office, or write Allis-Chalmers, Milwaukee 1, Wisconsin.

A-3788

Texrope and *Super-7* are Allis-Chalmers trademarks.

A-C
ALLIS-CHALMERS

ALLIS-CHALMERS

When inquiring check CP 3776 on handy form, pgs. 2-3



This is a FISH story!

**Over 3,000,000 Fish
Processed Daily in a
well known southern
plant using...**



EVAPORATORS

Perhaps in your industry, too, increased profits and lower costs may result from consultation with GB Process Engineers.

GOSLIN-BIRMINGHAM

MANUFACTURING CO., INC.

BIRMINGHAM, ALABAMA

CHICAGO: F. M. deBeers and Associates, 20 N. Wacker

When inquiring check CP 3777 on handy form, pgs. 2-3

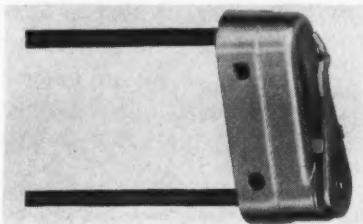
CONSTRUCTION

**Snap-action switches
for locations subject
to immersion . . .**

waterproof switch has hermetically sealed contact chamber

Uses: On equipment subject to immersion and in marine applications where moisture, dirt, or similar conditions could damage, reduce capacity, or short terminals of other switches.

Features: Waterproof leads, which are connected to terminals of switch, are potted in high-dielectric plastic to



Lever arm (far right) operates snap-action switch

completely seal terminals and leads. Contact chamber is filled with an inert gas under pressure and sealed.

Description: Metal case of switch is sealed at top by metal diaphragm, through which external actuating lever operates. Switches are available with leads of any required length and can be supplied with waterproof couplings. Electric rating of type "4HS" switch is as follows: 10 amp inductive load or 25 amp resistive load, 28 v DC; 1 amp inductive or resistive load, 125 v AC. Switch is available with single-pole, single-throw or double-throw contact arrangement.

(Product of Micro Switch, Dept. CP, Freeport, Ill. . . or for more information check CP 3778 on handy form, pages 2 and 3.)

**Variety of heater models
offer wide range
of output . . .**

gas-fired units deliver from 55,000 to 200,000 Btu's per hr

Uses: For delivering warm air in offices, laboratories, factories, or may also be used to circulate cool air by shutting off gas supply in warm weather.

Features: Five models offered cover range from 55,000 to 200,000 Btu's per hr, using natural, mixed, manufactured, or propane gases. Each unit is a complete heat generating and warmth distributing plant, equipped with automatic controls.

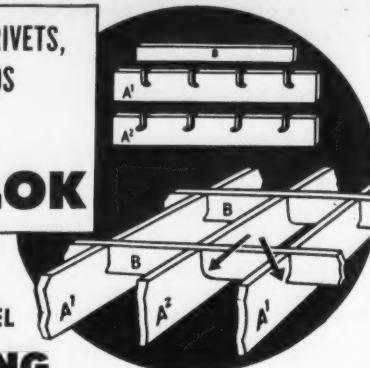
Description: Individual cast iron

**NO BOLTS, RIVETS,
OR WELDS**

with

TRI-LOK

**OPEN STEEL
FLOORING**



Tri-Lok open steel flooring is fabricated of cross-bars (see B above) twisted in opposite directions at each bearing bar (note arrows on A¹, A²), and pressed into position by a 1600-ton press! Truss action forms a rigid framework ideal for stairs, walkways, decks, loading platforms, and engine room installations.

Maximum openings allow ample light and ventilation, but no object over one-half inch square can slip through. Rectangular or U-type construction. Variety of metals—stainless steel, aluminum alloy, etc. Riveted and Tri-Forge welded flooring available. Write for Bulletin OB-1103.

DRAVO
CORPORATION

National Distributor for The TRI-LOK Company

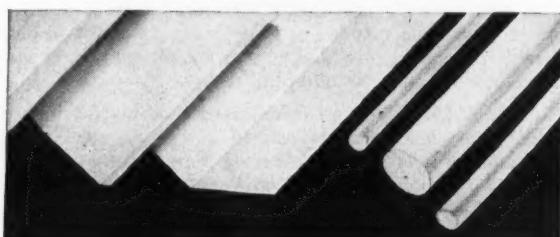
Dravo Building, Pittsburgh 22, Pa.

Sales Representatives in Principal Cities



When inquiring check CP 3779 on handy form, pgs. 2-3

**Need TEFLON* immediately
— and with optimum properties?**



**Get FLUOROFLEX-T® sheet, rod
from a complete stock of sizes**

"Teflon" powder is processed in new equipment expressly engineered to yield Fluoroflex-T products with optimum inertness and stability. Rigid control assures complete uniformity in Fluoroflex-T for better machinability and freedom from internal strains, cracks or porosity.

Because Teflon withstands -90°F to +500°F, is self-lubricating, and unaffected by virtually all chemicals . . . Fluoroflex-T becomes your best choice for packings, gaskets or seals. Write for new bulletin with technical data.

RESISTOFLEX CORPORATION, Belleville 9, N. J.

*DuPont trade mark for its tetrafluoroethylene resin.

**Resistoflex trade mark for products from fluorocarbon resins.

RESISTOFLEX

For out of the ordinary engineering with synthetics

When inquiring check CP 3780 on handy form, pgs. 2-3

CONSTRUCTION

burners are provided for each heat exchanger tube. Heat exchangers are made of heavy gage steel welded to steel headers. Steel baffles are placed inside heat exchanger tubes with external baffles to secure turbulence and radiated heat to the air flowing through the heater.

Individually adjustable louvres direct flow of heated air within the areas in which the units are hung. Overlapping blade type electric fan, part of the unit, operates on 110-115 v, single phase, 60 cps. Units are provided with a safety pilot burner, a safety pilot switch, and an electrically operated solenoid valve.

(Development of The National Radiator Co., Dept. CP, Johnstown, Pa. . . . or for more information check CP 3781 on handy form, pgs. 2 & 3.)

Construct universal joint with 6" hub diameter for heavy duty . . .

easy breakdown with threaded small pin and lock nut

Uses: For steel rolling mills, strip mills, galvanizing plants, and other heavy duty requirements.

Features: Ease of assembly and disassembly is made possible through the use of a threaded small pin and lock nut.

Description: Joint has forks cast of alloy steel with pins and blocks cast of cold-drawn steel. All parts are



Double jointed model is 25" long

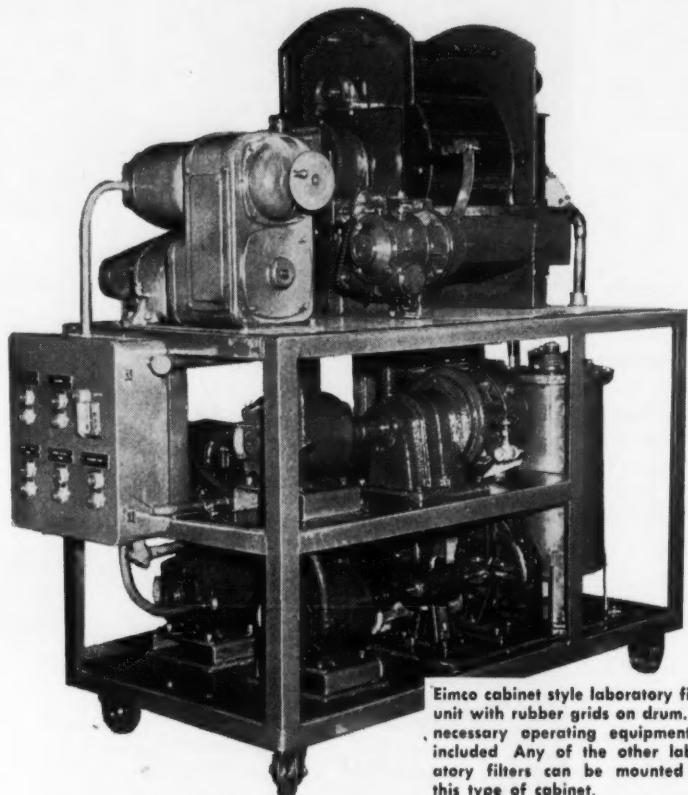
heat treated and ground for maximum strength and durability. Hubs are machined according to purchasers' specifications.

Single and double joint models weigh approximately 98 and 155 lb respectively. Universal joint has 6" hub diam with length of 15½" for single joint and 25" length for double joint.

(Product of Curtis Universal Joint Company, Dept. CP, Springfield, Mass. . . . or for more information check CP 3782 on handy form, pages 2 and 3.)

For more information on product advertised at right, specify CP 3783 . . . see information request blank between pages 2-3.

Reliable Filter Data In Your Own Laboratory with EIMCO C.F.P. Units



Eimco cabinet style laboratory filter unit with rubber grids on drum. All necessary operating equipment is included. Any of the other laboratory filters can be mounted on this type of cabinet.

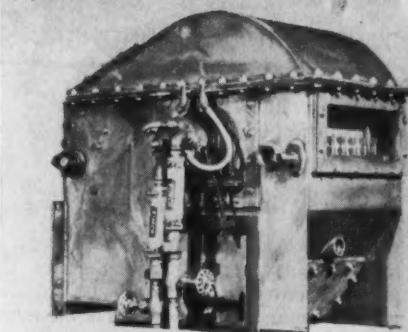
An Eimco Laboratory Filter is a complete filter plant (C.F.P.) in itself. Shipped from the factory with all necessary equipment ready to go to work for you in your laboratory.

EIMCO C.F.P. Units are proportional in design and construction. Data obtained on these units may be used to plan production plants.

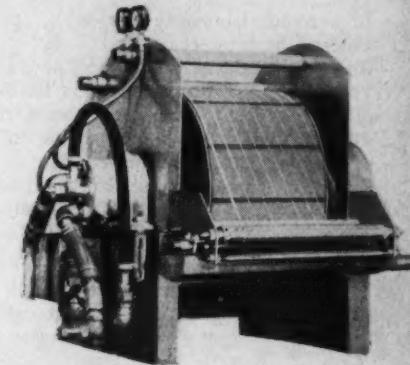
C.F.P. Units are available in disc or drum design with any of the numerous attachments that are available on EIMCO production size filters.

Laboratory Continuous Vacuum Filters are all equipped with EIMCO automatic valves and are heavy-duty units with equipment arranged to form a compact unit for easy moving around the laboratory or plant.

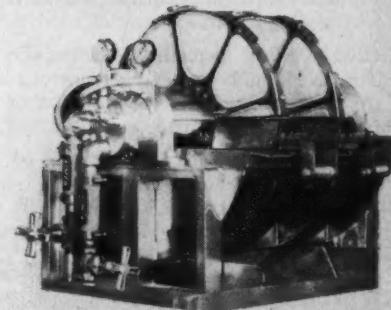
Write for more information.



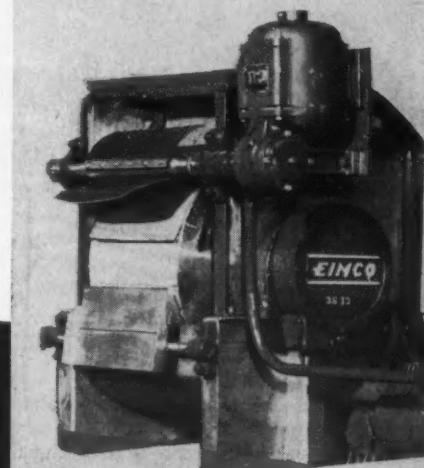
Eimco Laboratory size Precoat Filter for pressure operation.



Eimco Drum type Laboratory Filter with String Discharge Attachment and Wash Frame.



Two Disc Eimco Laboratory Unit. Also available with Single Disc.



Flapper and Drag Sheet attachment on Eimco Drum Type Laboratory Filter.

EIMCO

THE EIMCO CORPORATION

The World's Largest Manufacturers of Underground Rock Loading Machines
EXECUTIVE OFFICES AND FACTORIES - SALT LAKE CITY 10, UTAH, U. S. A.

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EL PASO, TEXAS, MILLS BUILDING • BERKELEY, CALIF., 627 CEDAR STREET
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IN FRANCE: SOCIETE EIMCO, PARIS, FRANCE
IN ENGLAND: EIMCO (GREAT BRITAIN) LTD., LEEDS 12, ENGLAND
AGENTS IN ALL PRINCIPAL CITIES THROUGHOUT THE WORLD



Wear on roller chain is reduced by use of self-lubricating sintered bushing . . .

oil-impregnated feature under 20 hr test indicates "several hundred" per cent increase in service

Laboratory tests and field installations of the new, oil-impregnated sintered bushing roller chain indicates a marked increase in service life on applications where normal lubrication of the power transmissions is not available, manufacturer reports. Up to now the use of roller chain has been limited, due to the need for either externally applied or totally enclosed lubrication.

In a recent laboratory test, a $\frac{5}{8}$ " pitch oil-impregnated sintered bushing chain and a $\frac{7}{8}$ " pitch standard roller chain, prelubricated to the best practice, were installed on 19-tooth and 45-tooth sprockets having a center distance of 8.75 inches. The chains were run under a 10 hp load at 1900 rpm — comparable to a motorcycle chain operating at 80 mph using full engine horsepower. After 20 hr, the standard roller chain showed wear or elongation of 0.380", while the oil-impregnated sintered bushing chain showed an elongation of 0.080".

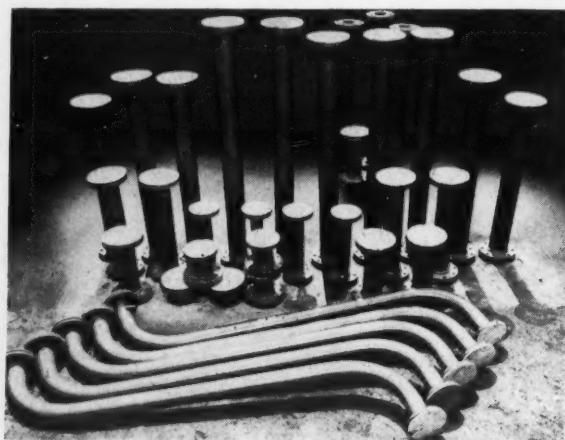
(Product of the Whitney Chain Co., Dept. CP, Hartford, Conn. . . or for more information check CP 3784 on handy form, pages 2 and 3.)

No failure for four years since rubber-lined pipe was installed . . .

lines used for circulating sea water had to be regularly replaced before

Uses: For increasing serviceability of pipe carrying corrosive liquids or having numerous bends in it. Necessity of breaking lines for insertion of fittings when flow is changed is eliminated.

Features: Periodic examination of sections of rubber-lined steel pipe used for handling sea water during the nearly four years since installation has revealed no failure, and none is expected. In this case brass pipe and fittings



Sections of rubber-lined pipe show no adverse effect from sea water service

had been used for circulating sea water for cooling purposes on engine room equipment of a vessel for a large steamship company. Lines were continually being replaced because of breakdown due to electrolytic action.

From inspection of rubber-lined pipe used the past four years, it is evident that marine growth is inhibited and

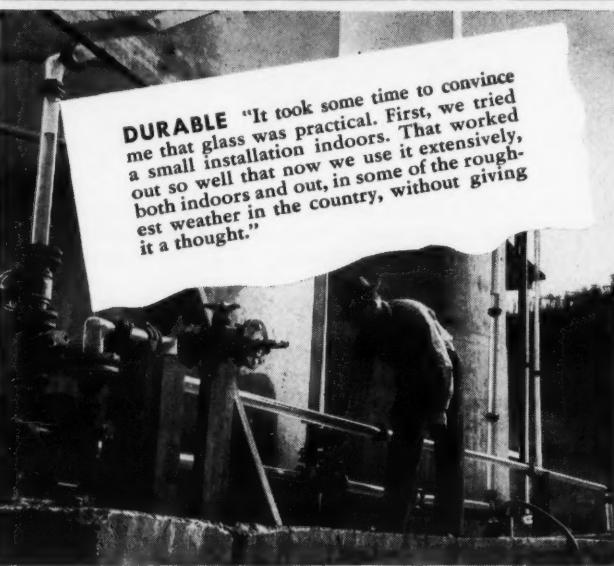
Why more chemical processors



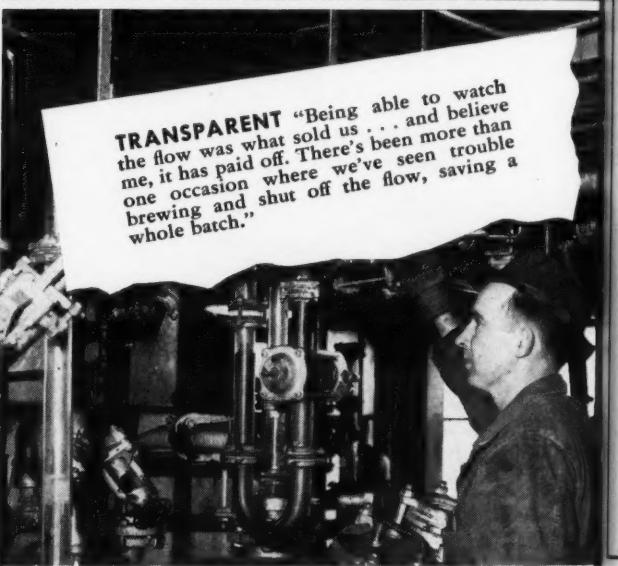
CORROSION-RESISTANT "Glass is the most corrosion-resistant material I know. Our PYREX pipelines show no effects after months of running hot acids through them."



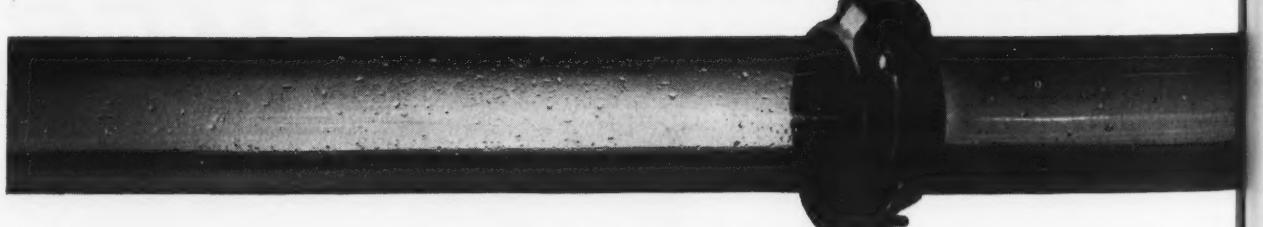
NON-CONTAMINATING "We're handling a highly sensitive product. Even the slightest contamination would ruin an entire batch. We had to be sure we were using an absolutely safe piping material. That's why we chose PYREX brand glass pipe."



DURABLE "It took some time to convince me that glass was practical. First, we tried a small installation indoors. That worked out so well that now we use it extensively, both indoors and out, in some of the roughest weather in the country, without giving it a thought."



TRANSPARENT "Being able to watch the flow was what sold us . . . and believe me, it has paid off. There's been more than one occasion where we've seen trouble brewing and shut off the flow, saving a whole batch."



are switching to PYREX® brand "DOUBLE - TOUGH" Glass Pipe

Here are 6 reasons why chemical engineers and processors who have had experience with PYREX brand "Double-Tough" glass pipe recommend it to you:

1. Highly resistant to corrosion, physical and thermal shock, PYREX pipe lasts longer . . . assures fewer production shutdowns, lower maintenance and replacement costs.
2. PYREX brand glass pipe is noncontaminating—protects even the most sensitive solutions.
3. Trouble can't hide behind transparent glass pipe. And its smooth surface makes cleaning easy. It can be sterilized with steam.

4. Costs less per foot installed than any other corrosion-resistant piping material.

5. Easy to install and plumb, your own plant help can put in your PYREX pipe installation.

6. PYREX brand "Double-Tough" glass pipe is available now in diameters of 1", 1½", 2", 3", 4" and 6" I.D. in standard lengths up to 10 feet. Fittings include 45° and 90° elbows, tees, reducers and crosses. Plug valves are available in 1" and 1½" sizes. For the complete story, check and mail the coupon . . . or contact the PYREX brand glass pipe distributor nearest you:

ALBANY 5, NEW YORK
A. J. Eckert Company

BELMONT, CALIFORNIA
Glass Engineering Laboratories

CAMBRIDGE 39, MASS.
Macalaster Bicknell Company

CHICAGO 44, ILLINOIS
Fred S. Hickey, Inc.

FRESNO 17, CALIFORNIA
Valley Fdy. & Mach. Works

HATBORO, PENNSYLVANIA
Sentinel Glass Company

ROCHESTER 3, NEW YORK
Will Corporation

HOUSTON 7, TEXAS
W. H. Curtis Company

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Fisher Scientific Company

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Fisher Scientific Company

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Scientific Supplies

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Stemmerich Supply Inc.

LODI, NEW JERSEY
Mooney Bros. Corp.

BUFFALO, NEW YORK
Buffalo Apparatus

OTHER PYREX brand GLASS PRODUCTS FOR THE PROCESS INDUSTRIES



PYREX brand Glass Fractionating Columns Offer:

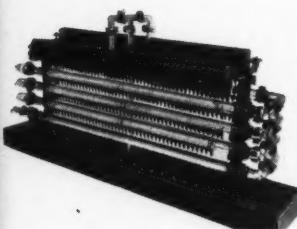
Uniform quality of distillate through elimination of product contamination.

Longer service life because of exceptional resistance to acid corrosion.

High efficiency with a wide range of solvents plus complete visual check on performance.

Sizes: 4", 6", 12" and 18" diameters. Available now at reasonable cost.

PYREX brand GLASS CASCADE COOLERS GIVE YOU:



Low first cost per BTU transferred besides increased economy through long service life.

Unusual versatility of mounting on floor, wall or ceiling to save valuable space.

Maximum heat transfer through thin but sturdy walls.

Available now at reasonable cost. Check and mail the coupon.

CORNING GLASS WORKS, CORNING, N. Y.



Corning means research in Glass

VISIT THE NEW CORNING GLASS CENTER



When inquiring check CP 3785 on handy form, pgs. 2-3

CONSTRUCTION & MAINTENANCE

that brackish water had no corrosive or abrasive effect.

Description: "Anti-Oxidant" rubber lining is used to combat corrosion, erosion, or abrasion in pipe or other equipment. It is said to eliminate failure at pipe bends. Recommended practice is still to place limit of two 90° bends for each connected length of pipe. However, through development of improved application process, it is now possible to apply lining on three 90° bends in a single length of pipe as small as 4" in diameter.

With this method of lining pipe, it is no longer necessary to break a line for insertion of fittings to provide a change in flow. This applies to pipe diameters above 1½". Insertion of fittings has been a distinct disadvantage especially where close clearances were encountered.

Manufacturer states that method of lining pipe and fittings results in smooth interior surface around bends. Also, lining helps to decrease failure at point where pipe lining extends over flange face when flanged connections are used. Entire surface lined is checked with 40,000 volt test equipment to disclose any defects.

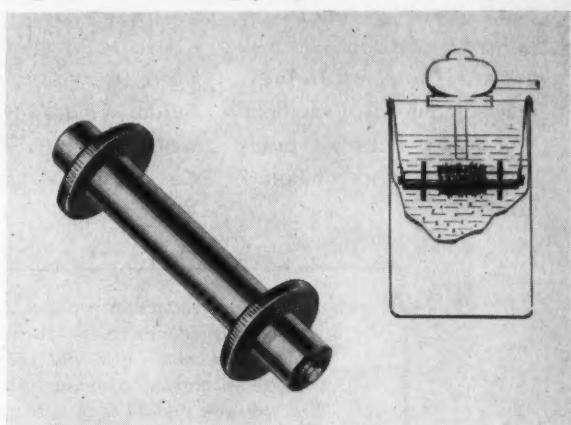
(Product of La Favorite Rubber Mfg. Company, Dept. CP, 264 Wagaraw Road, Paterson, N. J. . . or for more information check CP 3786 on handy form, pages 2 & 3.)

Traps steel particles to prevent their passage through cooling system . . .

dangerous chips are cleaned from magnet by wiping action of sliding ring

Uses: For preventing steel particles from entering circulating cooling systems of grinders, lathes, light production drilling or tapping machinery, or to purify gear testing tanks.

Features: All floating steel particles are trapped by magnet instead of being pumped back into the system to



Thwarts passage of dangerous steel particles through coolant system

damage work or tools. Load is removed by simply pushing wiper ring to opposite end of tube.

Description: Magnetic unit 1½" diam x 8" long is suspended under pump intake in coolant tank. Unit accumulates mass of chips 4½" long, 1" thick around its entire circumference. Larger sizes for paint, and porcelain-enamel tanks, etc, to order.

(Development of Magnetool Div., Multifinish Mfg. Co., Dept. CP, 2114 Monroe Ave., Detroit 7, Mich. . . or for more information check CP 3787 on handy form, pages 2 and 3.)

*if your
problem is to
consider the
SPROUT-WALDRON*

ROLLER MILL



Here is a Roller Mill that has many size reduction uses in the processing industries.

Equipped with rolls of correct corrugations and run at proper differentials, it will granulate your product, crack it, pulverize it, shred it or flake it. For many products it is the most economical grinder.

For full details about the Sprout-Waldron Roller Mill write to Sprout-Waldron & Co., Inc., 10 Logan Street, Muncy, Pa.

When you have a size reduction problem it will pay you extra dividends to consult with Sprout-Waldron. Nowhere else will your problem receive as impartial an analysis—nowhere else will you find as wide a range of types of machines, nor as wide a range of sizes and styles of each type.



SPROUT-WALDRON

The Best in PROCESSING EQUIPMENT Since 1866

**GRANULATE
CRACK
PULVERIZE
SHRED
FLAKE**

CONSTRUCTION

Hexagonal tumbler turns over 200 lb load at 33 rpm . . .

powered by $\frac{1}{4}$ hp, machine operates on anti-friction bearings

Uses: For production finishing of small parts or small lots of large parts.

Features: Hexagonal steel burring barrel has 200 lb capacity, turns over at rate of 33 rpm on anti-friction bearings by means of $\frac{1}{4}$ hp motor. Automatic slack take-up keeps turntable belt tight.

Description: Model TMK pictured has 110 v, AC single phase motor, weighs 130 lb. Floor space required 36 x 19", height 33". Barrels fur-



Turntable belt is kept tight automatically

nished either unlined or lined with vinyl plastic which resists oil and chemicals.

(Development of Rampe Manufacturing Co., Dept. CP, 3320 St. Clair Ave., Cleveland 14, Ohio . . . or for more information check CP 3789 on handy form, pages 2 and 3.)

Withstands temps to 1600°F without turning dark . . .

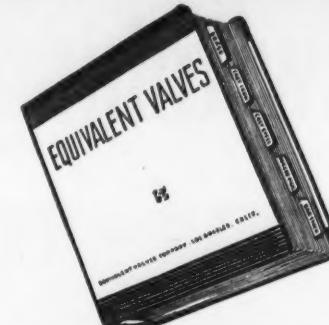
can be applied over surfaces which are rusty, oily, etc

Uses: Metal surfaces subject to elevated temperatures.

Features: Although best results are obtained when applied to a clean, dry surface, coating also can be used over surfaces which are rusty, slightly greasy or oily, etc and still be effective.

Description: Super Hot aluminum paint is reported to withstand temperatures up to 1600°F and on some metals, even higher temperatures. It will not dull or turn brown as high heat is applied — instead it will turn brighter, with a maximum brilliant aluminum color at 1600°F.

It has been demonstrated that under



ENGINEERING MANUAL ON VALVES

Slashes time spent on valve specifying and checking. Compares valves of 19 leading manufacturers. Over 50,000 postings in its 170 looseleaf pages! Used by major companies throughout U.S.A.

SPECIAL OFFER—New, revised edition just out. Price \$25. Offered at \$21.50 for limited time only. (Expires in 30 days). Every specifying engineer, every purchasing agent should have this manual. Like adding an extra man to your staff. We send on approval. Write NOW for full information.

EQUIVALENT VALVES COMPANY

5th Floor
115 West 7th St. Los Angeles 14, Calif.

When inquiring check CP 3790 on handy form, pgs. 2-3

**The Revolutionary NEW
GRIP-STRUT Safety GRATING**
gives MAXIMUM STRENGTH
with MINIMUM WEIGHT

**RUGGED
LOW COST
NON-SKID
VERSATILE**

A Globe
patent feature
(Patents Pending)

NOT welded. Vertical members joined by integral saddles to form a positive NON-SKID surface under all conditions. In one single unit, GRIP-STRUT Safety Grating combines great strength with light weight, its side channel members greatly reduce cost of construction and simplify installation. Easy to maintain and clean. Replaces old or obsolete types of grating. Grip-Strut has a lower cost factor than any other type of grating. Available in steel or aluminum.



GRIP-STRUT division

THE GLOBE COMPANY

4006 S. Princeton Ave.

Chicago 9, Illinois

When inquiring check CP 3791 on handy form, pgs. 2-3

CONSTRUCTION

certain conditions, the product will give metals longer wear. For example, in a test using wrought iron, one panel not painted broke down at 1100°F, while another panel painted with one coat of Super Hot held up to more than 1200°F.

One coat of Super Hot is sufficient for most applications. It can be applied by brushing, spraying or dipping and will air dry within 30 min. after which time heat can be applied.

In addition to its heat resistant properties, it offers protection against corrosive attack and weathering.

(Developed and manufactured by Sheffield Bronze Paint Corp., Dept. CP, 17814 Waterloo Road, Cleveland 19, Ohio . . . or for more information check CP 3792 on handy form, pages 2 and 3.)

Toggle bolt contributes to possible reduction of inventories . . .

toggle may be installed with head or nut outside the wall

Three distinct advantages have been reported for Super-Grip 3-in-1 toggle bolts. These features make reduced inventories possible because the toggle bolt is reversible in the head and provides flexibility heretofore not possible.

According to report, these advantages are that bolts may be installed (1) with head of bolt outside the wall, (2)

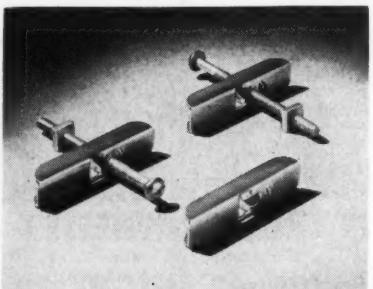


Illustration shows reversible character of toggle bolt assemblies

with nut outside wall, and (3) toggles may be purchased separately for use with any bolt. Toggle head is available from stock for bolt diameters from $\frac{1}{8}$ to $\frac{1}{2}$ ".

(Product of Super-Grip Anchor Bolt Co., Inc., Dept. CP, 3333 N. 22nd St., Philadelphia 40, Pa. . . . or for more information check CP 3793 on handy form, pages 2 and 3.)

For more information on product at right, specify CP 3794 . . . see information request blank between pages 2-3.

SQUEEZED FOR SPACE?



If plant expansion pains have you squeezed for floor space, Fairbanks-Morse Builttogether Centrifugal Pumps can help solve your problems.

These compact, efficient pumps can be mounted horizontally, vertically, or on an angle . . . on the floor or from the ceiling. Backed by the Fairbanks-Morse reputation for quality, these pumps will always deliver outstandingly dependable performance. An important extra advantage to you is the fact that both motor and pump are built by Fairbanks-Morse . . . your assurance of efficient service.

Fairbanks-Morse Builttogether Pumps are available in both single and two-stage models . . . in capacities up to 1000 gallons per minute against heads up to 550 feet. For complete information, see your local Fairbanks-Morse Branch, or write Fairbanks, Morse & Co., 600 S. Michigan Ave., Chicago 5, Ill.

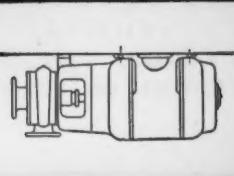


FAIRBANKS-MORSE,

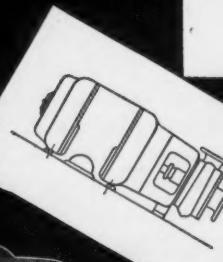
a name worth remembering

PUMPS • DIESEL LOCOMOTIVES AND ENGINES • ELECTRICAL MACHINERY • SCALES
HOME WATER SERVICE EQUIPMENT • RAIL CARS • FARM MACHINERY • MAGNETOS

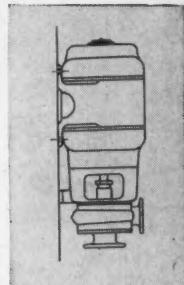
Fits anywhere
—any way



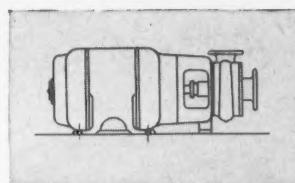
Upside down



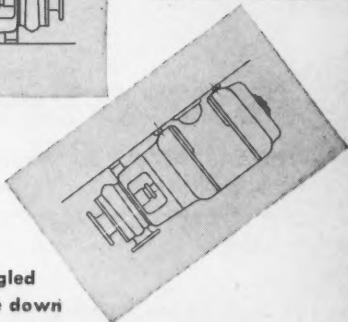
On an angle



Vertically



Horizontally



Angled
upside down

Salvaging dollars

from COTTON SEED
PROCESS DUST with

the DUSTUBE®

COLLECTOR

at FARMERS' AND GINNERS'
COTTON OIL COMPANY



This Dustube Collector annually salvages over \$7000 worth of valuable cotton seed bran feed.

Although the meat packer proudly claims a use for everything but the pig's squeal, even the processing dust created in cotton seed by-products production is profitably salvaged at Farmers' and Ginners' Cotton Oil Co., Birmingham. This firm not only extracts oil from the seed, but they also obtain valuable cattle bran feed and linters or fibre from the seed hull.

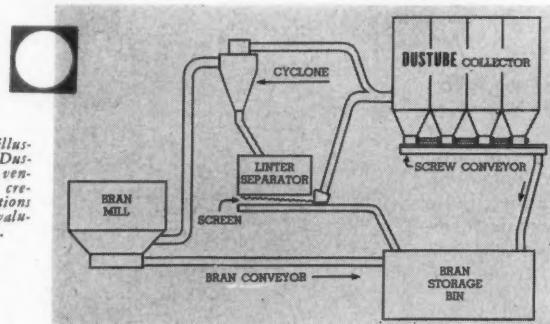
In the Fibre Department dust, consisting of marketable material, had always been a problem. Its escape into the atmosphere created extremely dusty conditions adding to plant maintenance costs, and its extreme fineness and other characteristics made it a fire hazard. Cyclone collectors and a large settling room were ineffective.

SAVES \$7000 ANNUALLY

Addition of a high efficiency Dustube cloth-tube type Dust Collector to the system solved this problem—and at a profit. The Dustube Collector filters the dust laden air so that only clean air is discharged. Salvaged dust is now automatically returned to the process at an estimated savings of over \$7000 annually.

Results of Dustube Collector efficiency like this are duplicated throughout the chemical processing industry. Dustube engineers will be glad to show you how your dust and fume problems can be handled with equal efficiency.

Write today for Catalog 72-B.



CONSTRUCTION

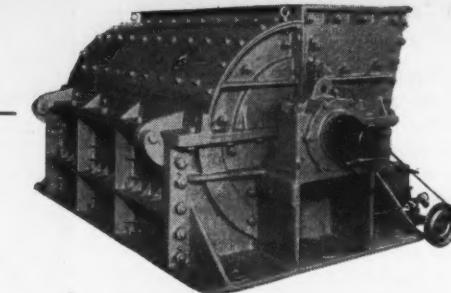
Can regulate pumping to suit conditions of operation . . .

switch has no exposed electrodes or floats to corrode

Uses: For pumping of sumps or tanks where it is desired to relate water level to pumping action.

Features: Submersible actuating switch has no exposed electrodes or floats to corrode or stick.

Description: With Kenco switch and submersible pump, it is possible to control pumping action to exactly suit operating conditions. For example, if a sump is small with a constant flow of water entering, the switch can be placed just as high as necessary on the discharge pipe to keep the number of cycles to a mini-



SHREDDERS for Industries who buy their raw materials loose or baled — Strips or Sheets

Typical raw materials handled with a Gruendler Shredder . . .

CORK
BAGGASSE
STRAW

SCRAP PAPER
PULP LAP
LEATHER

AND MANY OTHER MATERIALS

Call on us, if you have a special material refining job to do.

Write for Bulletin 11 B.

GRUENDLER CRUSHER & PULVERIZER CO.

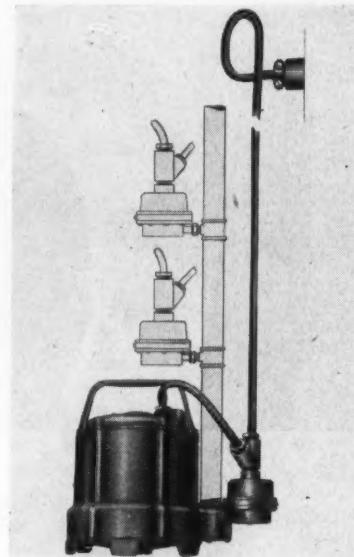
Plant & Executive Offices —

2915 North Market

St. Louis 6, Mo.

LABORATORIES, 1911 North Market, St. Louis, Mo.

When inquiring check CP 3797 on handy form, pgs. 2-3



Actuating switch can be placed in any position on discharge pipe

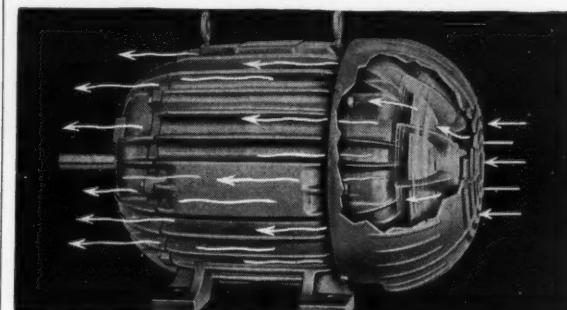
num. This keeps pump from operating too frequently.

If it is desired that a certain amount of liquid remain in the tank or sump, the Kenco pump can be placed on blocks to raise it to the required height.

Submersible Kenco circulating or sump pumps operate at any practical depth required and they are completely waterproof.

They lend themselves to either permanent or temporary installation. Capacities up to 3300 gph at a 10' head are available.

(Manufactured by Kenco, Inc., Dept. CP, 1125 North Ridge Road, Lorain, Ohio . . . or for more information check CP 3796 on handy form, pages 2 and 3.)



THE ELLIOTT CROCKER-WHEELER Sealedpower MOTOR

Completely enclosed, there's no way in for dirt, dust, moisture or fumes. But there's an easy out for heat—via the 150% increased radiating surface of the many radial fins, plus the fan-driven air blast along and around the fins and frame. Cleans itself, too—the air blast gives dirt and dust the quick brush-off.

The C-W Sealedpower Motor is ideal for any service within its capacity range—proven by its 10-year service history. Available equipped with the newly designed C-W Brake . . . Also in explosion-proof construction. Bulletins from Elliott Company, Dept. CP, Jeannette, Pa.

CW-31

ELLIOTT COMPANY

**CROCKER-WHEELER
DIVISION . . . AMPERE, N. J.**

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in Principal Cities
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Cover the Country

American
WHEELABRATOR & EQUIPMENT CORP.
478 S. Byrkt St.

dustube
COLLECTORS

When inquiring check CP 3795 on handy form, pgs. 2-3

Push valve for manual control of air and gas lines . . .

on breakdown test, valve shows no leakage after 1,000,000 cycles of operation

Uses: In air and gas lines where manual control of an intermittent flow is required and where there must be no leakage through valve or around valve stem. Typical applications include use with hydrostatic gages, with single and multiple pressure test stands, blowing out or purging of gas or air lines, and with processing operations requiring an occasional shot of air or gas.

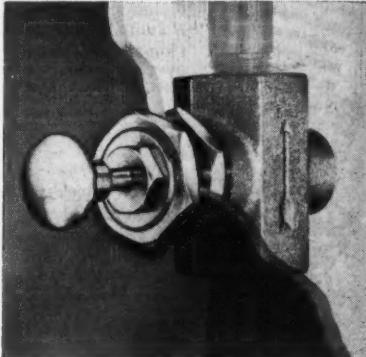


Illustration shows Model PV push valve for panel mounting

Features: Valve is opened by pressing knob on valve stem, closes when knob is released. It has no compression packing, requires no adjustment, being sealed by Neoprene O-rings. The O-rings are readily accessible by removing a nut and lifting out valve stem. On breakdown test, valve shows no leakage after 1,000,000 cycles of operation.

Description: Valve is available in two styles: Model PV for mounting on panels of any thickness up to 7/16", model LV for in-the-line mounting. Inlet and outlet are tapped for 1/4" pipe and direction of flow is shown by arrow on valve frame. Discharge rate is 25 to 30 cfm at a pressure drop of 100 psi.

(Product of King Engineering Corp., Dept. CP, Box 520, Ann Arbor, Mich. . . or for more information check CP 3799 on handy form, pages 2 and 3.)

For bonding polystyrene—two new adhesives . . .

one for rough or poorly matted surfaces, other for "felt pad" method of application

Two new cements developed specifically for bonding polystyrene are now in production by the Chemical Development Corporation. Cement #1508, the concern reports, is believed to be one of the strongest adhesives for styrene available today. It is a crystal clear bodied cement with a medium to fast setting time and is particularly recommended for use on rough or poorly matted surfaces.

It is slightly plasticized and produces bonds of very high tensile and impact strength. Can be used as a general-purpose adhesive for polystyrene, and also for bonding polystyrene to acrylic plastics, felt insulation, cotton duck, cork, and many other substances. It is easily applied by brushing or dipping.

Cement #1509 is a solvent mixture developed specifically for bonding polystyrene to itself. It is non-flammable and reported to be ideally suited for the "felt pad" method of application. It produces a high tensile, and medium to high impact strength bond.

(Product of the Chemical Development Corporation, Dept. CP, Danvers, Mass. . . or for more information check CP 3800 on handy form, pages 2 and 3.)



we're looking for
TROUBLE!

• Yes, and we've found it in a lot of places in the past 15 years. That's why thousands of Moyno are pumping today in virtually every industry.

Where materials are hard to move, the Moyno knows no equal. Even non-pourable pastes and heavy slurries present no service problems.

When high maintenance hurts, Moyno brings costs down. "Progressing-cavity" pumping action resists abrasives and chemicals, develops positive pressure without pulsation or turbulence.

IF YOU HAVE A PUMPING PROBLEM, look to Moyno. They work where nothing else will! And, if present pumps are giving you trouble, may we suggest prompt inquiry? Write today for free Moyno Bulletin C-30-F.



ROBBINS & MYERS • INC. SPRINGFIELD 99, OHIO
BRANTFORD, ONTARIO

When inquiring check CP 3801 on handy form, pgs. 2-3

CONTINUOUS SEPARATION

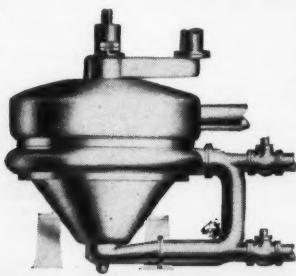
OF
LIQUIDS AND
SUSPENDED SOLIDS



The Merco Separator brings the modern, continuous flowplan to new phases of the chemical industry. It replaces bulky, batch-type operations, eliminating inherent slowness, contamination and fluctuations.

Versatile Merco Separators are economical replacements for conventional settling tanks, filters and centrifuges. In addition, Merco separators handle micro-classification and washing of extremely fine particles—functions that cannot be economically duplicated by other means.

Merco continuous separation is based on a unique return flow principle. Clarified liquids and concentrated solids are separated and discharged without clogging, buildups, surges or retention of material. The action is entirely enclosed. All controls are external and simple.



Write today for descriptive bulletin C19 and application data.

MERCO CENTRIFUGAL CO.

AFFILIATE OF THE MERRILL COMPANY, ENGINEERS
150 GREEN STREET • SAN FRANCISCO • CALIFORNIA

When inquiring check CP 3802 on handy form, pgs. 2-3

CONSTRUCTION

**Bantam size pump
can handle to
450 gph . . .**

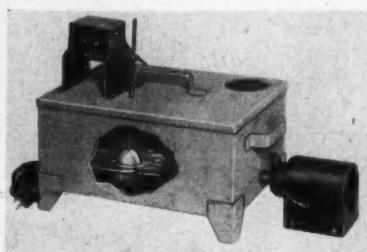
has a flooded suction and never requires priming

Uses: Condensate pump.

Features: Compact and low design which eliminates necessity of placing in pit. Pump has flooded suction and never requires priming.

Description: Attached tank has a capacity of 5 gal with a $5/8$ " OD tubing outlet. Coupled to latter is an all rubber bantam size centrifugal pump of 1/35 hp. Pump has a synthetic rubber impeller molded to a stainless steel shaft.

An automatic pump control consists



Showing copper float which actuates micro-switch

of a heavy-duty micro-switch actuated by a copper float inside the tank.

Capacity is 450 gph at 2' to 168 gph at 8'. Unit is easily portable, weighing only 16 lb complete with pump and motor. It is also fan cooled and continuous duty—extremely quiet in operation.

(Announced by Samuel S. Gelber Co., Dept. CP, 162 N. Clinton St., Chicago 6, Ill. . . or for more information check CP 3803 on handy form, pages 2 and 3.)

**Nylon, abrasives combined
to give easier cut
on masonry . . .**

break-resistant blade adaptable to portable saws

Strong, break-resistant blade made of nylon and abrasives gives "excellent" cutting qualities required in the masonry field. Known as Valsafe, and in many diameters and a wide range of arbor holes, the blade is adaptable to hand electric saws for routing old mortar joints, as well as cutting masonry materials—including clay and concrete products. (Development of Victor Engineering Corp., Dept. CP, 27 Maplewood Ave., Philadelphia 44, Pa. . . or for more information check CP 3804 on handy form, pages 2 and 3.)



H & K PERFORATED METALS

Precision-perforating where you can't gamble with accuracy. Industrial or ornamental uses . . . special, unusual applications. Metals, plastics, fabrikoids, rubber, treated cloth, and other sheet materials of all gauges. From tissue thickness to heavy steel, 1" thick. Limitless pattern choice.

Positive Uniformity

Tolerances as close as $\pm .0005$ ". Round perforations from .020" to 9", slots from .006" wide. Strong, smooth, easily cleaned surfaces. Stainless steel and chemical resisting alloys a specialty.

Complete FABRICATION FACILITIES

. . . fully-equipped to roll, shear, braise and weld to specification, such as filter plates, trays, conveyor linings, radiator grilles. Consult H & K for dependable accurate pattern perforations in tune with your production budget.

**Harrington & King
PERFORATING**

5636 Fillmore St., Chicago 44, Ill.
114 Liberty St., New York 6, N. Y.

When inquiring check CP 3805 on handy form, pgs. 2-3

PERFORMANCE PLUS at LOWER COST where liquids are used in PROCESSING



AURORA
Always
PUMPS

AURORA
PUMP COMPANY

62 Loucks Street, Aurora, Illinois

When inquiring check CP 3806 on handy form, pgs. 2-3

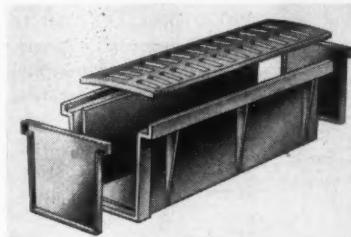
CHEMICAL PROCESSING

CP3800
No special tools required
to install drainage units

may be fit together in slip-joint manner to any length and set in earth or concrete

Uses: For drainage control of plants and factories. Drainage units may be installed on straight or curved terrain.

Features: There are no forms to build, no screws or nuts to remove, and no special tools are required to install or clean units. Drain-Master units fit together in slip-joint manner. Thus, any desired length of drainage installation is possible. Pre-fabricated units are said to be economical in cost and to last indefinitely. They may be installed in either earth or concrete.



Drainage unit shown may be connected in series on straight or curved terrain

loads. Three available sizes vary only in depth. Units measure $13 \times 9\frac{3}{4} \times 4\frac{1}{4}$ "; larger sizes of $6\frac{1}{4}$ and $8\frac{1}{4}$ ".

To close off ends, pieces are available with or without flanged holes. Center pieces are also available with one or two flanged holes. Drain pipe or tile may be fitted to flanged hole to carry away liquid. Units may be obtained with drain holes in any or all four sides and bottom surface.

Four inch flanged holes allow liquid to flow through unit without clogging pipes. To clean, one simply lifts off top grating and removes gravel and similar refuse.

(Product of Standard Foundry Products, Dept. CP, 220 W. 42nd St., New York 36, N. Y. . . or for more information check CP 3807 on handy form, pages 2 and 3.)

**Cutting of concrete, cinder blocks
is easy problem with
masonry blade . . .**

by withstanding twisting, strains, and binds, abrasive blade is practical for portable units

Uses: For cutting of concrete block, cinder block, most common brick, and the softer ranges of stone.

Features: Blade is particularly suited for use on any make of hand power saw because of its ability to withstand twisting, strains, and binds. Cutting life is reported two to three times longer than that of the standard types abrasive blade on the softer ranges of material.

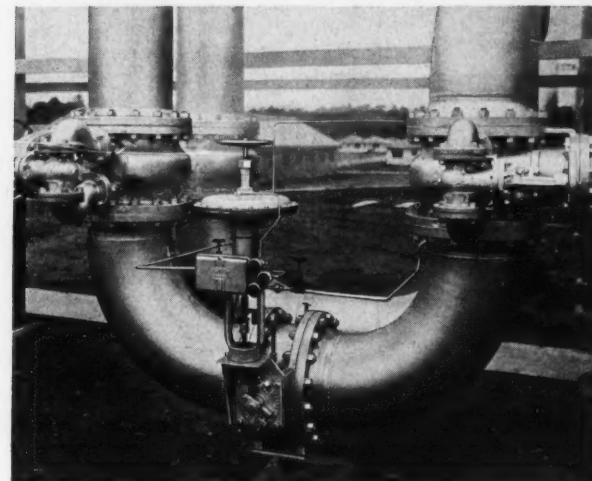
Description: "Tuffie" masonry blades are reinforced internally with layers of strong fabric, and are further protected by a safety web molded into the blade surface.

Blade sizes range from 12 to 18" diam for masonry saws, 6 to 8" diam for hand power saws. This blade is not recommended for cutting very hard, vitreous materials such as glazed tile, acid proof brick, terra cotta, etc, which are better cut with manufacturer's wet or dry abrasive blades or with diamond blades.

(Development of Eveready Briksaw Co., Dept. CP, 1509 S. Michigan Blvd., Chicago 5, Ill. . . or for more information check CP 3808 on handy form, pages 2 and 3.)

R-S 600 valveEvents

• EXCERPTS FROM THE R-S BOOK OF EXPERIENCE •



▲ R-S Automatic Valve installed on water jacket to gas engine in gas booster station.

WIDE RANGE of Application

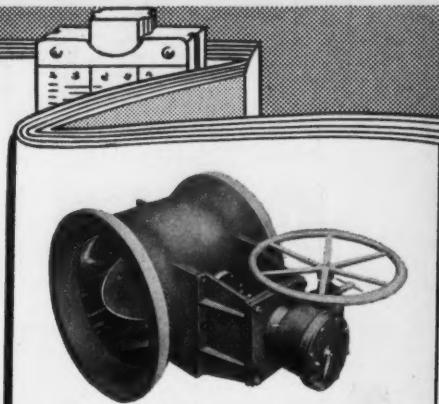
R-S Valves are used in air, gas, liquid, steam, and semi-solid service for the shut-off and regulation of volume and pressure, pressure relief, liquid level control, back pressure, water hammer, steam hammer, constant differential pressure, and the output control of pumps, fans, engines and turbines. Suitable for service in the temperature range from minus 300° to plus 2000° F. 2 to 2500 psig.

Simplicity of design, ease of operation, positive rubber seat shut-off, and the wide range of application indicate the high order of metallurgical and mechanical engineering that is embodied in every R-S valve.

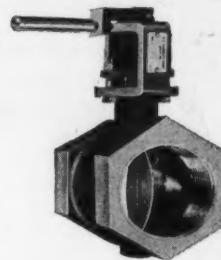
Consult your local R-S Valve Engineers, or write direct.

R-S PRODUCTS CORPORATION
4600 Germantown Avenue, Philadelphia 44, Pa.

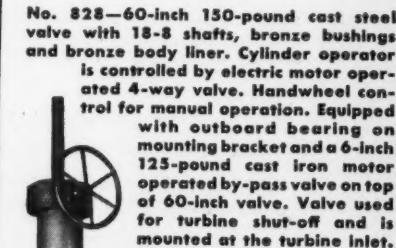
An S. Morgan Smith Company Subsidiary
DISTRICT OFFICES IN PRINCIPAL CITIES



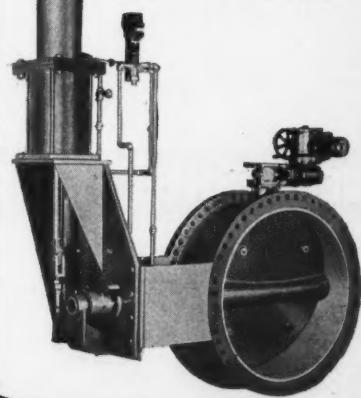
No. 836—24-inch 125-pound cast iron hub-end valve with bronze liner and monel periphery on vane for water service. Equipped with totally enclosed gear reducer, hand-wheel and locking device.



No. 801—3-inch 125-pound bronze screwed-end valve with handle lever control and locking device.



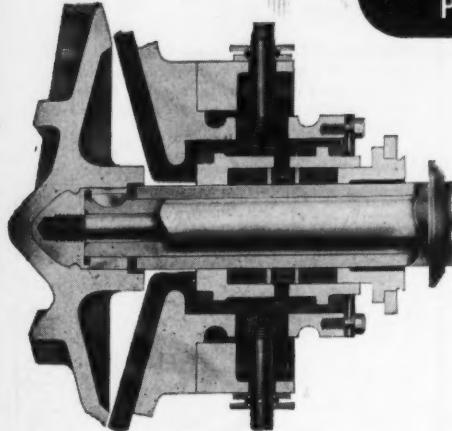
No. 828—60-inch 150-pound cast steel valve with 18-8 shafts, bronze bushings and bronze body liner. Cylinder operator is controlled by electric motor operated 4-way valve. Handwheel control for manual operation. Equipped with outboard bearing on mounting bracket and 6-inch 125-pound cast iron motor operated by-pass valve on top of 60-inch valve. Valve used for turbine shut-off and is mounted at the turbine inlet.



When inquiring check CP 3809 on handy form, pgs. 2-3

OLIVITE Acid-Handling Pump

How It Answers the Problem of Leakage



Illustrated is the stuffing box assembly of the Olivite Acid-Handling Pump.

Since pump leakage is probably the Number 1 Enemy when handling corroding solutions, note how in the Olivite Pump, extra precautions are taken to prevent leakage:

- 1 The stuffing box floats on two rubber rings which permits shaft and packing movement. The packing is not crushed nor is the replaceable shaft sleeve scorched.
- 2 The lantern ring permits circulation of the lubricant, water, solution, or grease.
- 3 The resilient packing is of acid-resisting material styled for long life.
- 4 Simple spring loaded wing nut adjustment permits application of correct and proper pressure by the yoke on the gland and packing. No "monkey" wrench required.

Thousands of Olivite Acid-Resisting pumps have been supplied the Process Industries during the past 20 odd years. The values of these years of design, manufacturing and operating experience are embodied in every 1 1/4", 2" or 4" Olivite Pump you purchase. Bulletin 308-R provides full details. When writing us please outline your pumping problems.

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OLIVER UNITED FILTERS



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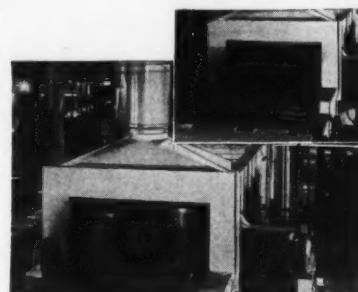
CONSTRUCTION

Provides continuous
washing, pickling,
phosphating . . .

safety increased by enclosing all operations

Uses: To prepare drums for painting, machine operates through nine stages comprising alkali wash, sulfuric acid pickling, and phosphate coating.

Features: Operations are said to be faster and require less man-power. All operations in one machine result



Drums enter machine for inside and outside processing

in better control and uniform product. Hazards from fumes, odors, and splashes are eliminated because all operations are enclosed.

Description: Spray-type processing machine is intended for 55-gallon drums. Both inside and outside of drums can be processed. Inside processing requires that drums go through machine before ends are welded in.

(Product of Morrison Industries, Inc., Dept. CP, 17700 Broadway, Bedford, Ohio. . . or for more information check CP 3811 on handy form, pages 2 and 3.)

Claims perfect sealing
and 40% reduction
in pressure drop . . .

coupling can be connected or disconnected with the fingers

Uses: Principal applications are on air tools, motor driven generators, water and paint lines, and on steam pipes in tire remolders.

Features: Fitting is stated to reduce pressure drop by 40%; will withstand temperatures from -65°F to +350°F.

Description: By streamlining the inner valve and employing a square cut synthetic rubber gasket, perfect sealing is said to be accomplished in this coupling. It can be connected or disconnected with the fingers. When disconnected, coupling is self sealing on the socket side, but it can be made so on both sides with no loss of liquid. It is currently in production in pipe

NEW Corrosion-Resistant

Speedline fittings



LOWER PIPING COSTS result when you use **Speedline** fittings, because you can use lightweight Schedule 5 pipe. Increased ID of Schedule 5 pipe gives lines increased capacity.

RAPID INSTALLATION is possible because the **Speedline** method often eliminates the need for welding or flaring.

Write for your copy of this 20-page **Speedline** catalog. It gives you the entire story.

HORACE T. POTTS CO. Since 1815

Erie Avenue & D Street, Philadelphia 34, Pa.
Baltimore Branch Warehouse, 2835 Sisson Street

When inquiring check CP 3812 on handy form, pgs. 2-3



This Spencer Portable Vacuum Cleaner has 30 times the cleaning power of an ordinary home type machine. The dirt can holds 7 1/2 cubic feet of rubbish—and is removed by a foot lever and rolled on casters to the point of disposal. It's built for big business and uses standard Spencer Vacuum tools.

This is the type used by plants having up to 500 acres of floor space to clean every night or tons of metal to pick up and reclaim or bulky raw products to convey. Portable sizes from 1 1/2 to 15 HP. Stationary units to 100 HP. Ask for Bulletin No. 125-D.

THE SPENCER TURBINE COMPANY • HARTFORD 6, CONNECTICUT

SPENCER
HARTFORD

439-D

When inquiring check CP 3813 on handy form, pgs. 2-3

WIRE MESH

Maybe it all does look pretty much the same at first glance. But when a firm has been making wire mesh for 70 years man and boy, there's bound to be a little more to it than meets the eye — a little more know-how in engineering and weaving, a little more quality in the product, a little more service and satisfaction for the user.

JELLIFF WIRE MESH is woven in all ductile metals

JELLIFF WIRE MESH is woven in all commercial weaves

JELLIFF WIRE MESH is woven in widths up to 72 inches

JELLIFF WIRE MESH is economical. Every foot runs true to the specifications.



JELLIFF WIRE MESH is a quality product and has been for 70 years. You can depend on it.

Write today for full details about JELLIFF WIRE MESH, JELLIFF WIRE MESH PRODUCTS, and JELLIFF'S CONSULTATION SERVICE on wire-mesh engineering. Address Department 27.



When inquiring check CP 3814 on handy form, pgs. 2-3



used as original equipment
in DAUER Bonderite Washers

1. Lower first cost
2. Simplified and less costly installation
3. Take less space in tank
4. Higher heat transfer rate
5. No pipe joints in solution

Send for complete technical manual and descriptive Bulletin No. P54.

PLATECOIL
KOLD-HOLD MFG. CO.
LANSING, MICHIGAN

When inquiring check CP 3815 on handy form, pgs. 2-3

CONSTRUCTION



size diameters from $\frac{1}{8}$ up to 1". It is made in aluminum alloy but is also available in brass, carbon steel, or stainless steel.

(Manufactured by E. B. Wiggins Oil Tool Co., Inc., Dept. CP, 3424 E. Olympic Blvd., Los Angeles 23, Calif. . . or for more information check CP 3816 on handy form, pgs. 2 & 3.)

Turns concrete flooring into dense, non-porous, flint-like surface

Uses: Liquid treatment hardens and dust-proofs concrete floors for taking heavy trucking.

Features: Reputed to change the chemical structure of concrete on which it is applied, forming a dense,



Illustrating hardness of hardened concrete floor

non-porous, flint-like surface which retards dusting and rutting under heaviest traffic.

Description: Concrete Floor Hardener No. 860 is a clear, colorless liquid. By "granitizing" surface particles, it increases the strength of the concrete floor and retards cracking and chipping.

Can be readily applied by brushing or mopping. After application, floors are said to clean easier and to resist water, oils, and acids.

(Product of the Monroe Company, Inc., Dept. CP, 10703 Quebec Avenue, Cleveland 6, Ohio . . . or for more information check CP 3817 on handy form, pages 2 and 3.)



ODS Diaphragm SLURRY PUMP

Every Contact Inch Highly Corrosion Resistant

ODS Pumps are available, of course, unlined for handling non-corroding slurries or solutions but when protection is necessary, all contact surfaces are lined with rubber or neoprene.

So, if you have a pumping problem that calls for a diaphragm pump — regardless of the pH involved — get all the facts about the O.D.S. It can handle just about any slurry or solution found in industry. And it has one of the best low-maintenance features to be found among all pumps: a no-linkage, hole and slot-free diaphragm. Compressed air or vacuum actuates the diaphragm.

Our Bulletin 309-R — recently issued — gives all the latest details about the O.D.S. Pump. In writing for a copy, tell us about your pumping problem. We have a line of acid-handling centrifugal pumps, too — the Olivites.



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When inquiring check CP 3818 on handy form, pgs. 2-3



IS GRINDING YOUR PROBLEM?

HARDINGE MILLS

CONICAL MILLS

— The Hardinge Conical Ball (or Pebble) Mill is unequalled in efficiency. Grinds wet or dry, in open or closed circuit. Outstanding feature: natural size segregation of grinding media, from feed to discharge. Bulletin 17-B-13 for dry grinding; Bulletin AH-389-13 for wet grinding.

TRICONE MILLS

— Same ball segregation effect as obtained in the Conical Mill, plus additional grinding volume. Ideal for large capacity operations. Bulletin AH-414-13.

ROD MILLS

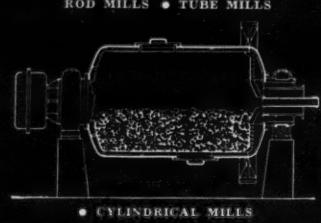
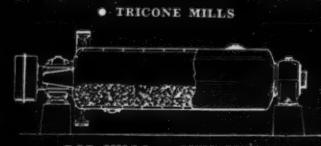
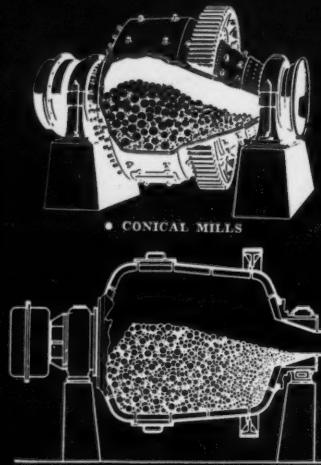
— Ideal for producing minimum oversize in open circuit grinding. Grinds either wet or dry. Convex heads reduce friction, prevent congestion of charge at the ends, and align the rods. Bulletin 25-B-13.

ROD MILLS • TUBE MILLS

— For a fine product in open circuit without the use of classifiers. For mixing and grinding to secure a smooth texture or plastic product. Bulletin 18-A-13.

CYLINDRICAL MILLS

— The Cylindrical Ball (or Pebble) Mills have demountable trunnions, and convex heads to reduce head liner wear and increase mixing action. Supplied with or without grates, as required. Bulletin AH-389-13.



• CYLINDRICAL MILLS

CONSTRUCTION

Filter may be serviced without disconnecting from pipe line . . .

formerly used for oil, now adapted for water

Uses: For filtration of water.

Features: Line filter can be serviced without disturbing pipe connections. It will operate in any position.

Description: Synclinal filter has been used for hydraulic and other low pressure oil recirculating systems. It has now been adapted for water



Can be easily disassembled and cleaned

use. Both line and sump types available can readily be taken apart and cleaned on spot. Line filter has capacity from 5 to 50 gpm and sump type from 5 to 100 gpm.

Design of unit provides large filtering area with considerable capacity for accumulating filtered out matter. Screen sizes for the unit run from 30 to 200 mesh.

(Product of Marvel Engineering Co., Dept. CP, 627 W. Jackson Blvd., Chicago 8, Ill. . . or for more information check CP 3820 on handy form, pages 2 and 3.)

Bibliography surveys air pollution

Causes, effects, control, and abatement methods are considered in 57-page bibliography on air pollution. More than 1500 references to literature on subject are cited in manual. Literature is listed according to biological, legislative, technical standards, education, and miscellaneous headings.

To obtain Manual Sheet P-13, remit 50c direct to Manufacturing Chemists' Association, Inc., Dept. CP, 246 Woodward Bldg., 15th & H Sts., N.W., Washington 5, D.C.

HARDINGE COMPANY, INCORPORATED

YORK, PENNSYLVANIA—240 Arch St. Main Office and Works

NEW YORK 17 • SAN FRANCISCO 11 • CHICAGO 6 • HIBBING, MINN. • TORONTO 1
122 E. 42nd St. 24 California St. 205 W. Wacker Dr. 2016 First Ave. 200 Bay St.

When inquiring check CP 3819 on handy form, pgs. 2-3

A better lining FOR DRUMS THAT TAKE A BEATING



■ Perhaps you've heard about how Unichrome Drum Linings are able to prevent corrosion of container and subsequent contamination of contents for many products.

But you may not realize how wide a range of applications these linings really have—or how long they last. Such materials as synthetic wetting agents and detergents, alcohols, vinyl latex solutions, bleaches, solvents, acids, foods and many other products are successfully resisted by one of the various types of Unichrome Drum Linings. These save drums from the punishment of long contact with the corrosives and often permit reuse without relining.

If you have a tough packaging problem, write for information about the Unichrome Drum Linings to help you solve it.

UNICHROME

COATINGS FOR METALS

Products of UNITED CHROMIUM, INCORPORATED
100 East 42nd St., New York 17, N.Y. • Detroit 20, Mich. • Waterbury 20, Conn.
Chicago 4, Ill. • Los Angeles 13, Calif. • In Canada: United Chromium Limited, Toronto, Ont.

When inquiring check CP 3821 on handy form, pgs. 2-3



PUT AN END TO LEAKING VALVES by installing DeZurik EASY-OPERATING PLUG VALVES. The deZurik RUBBER-FACED PLUG delivers a dead-shut, leak-tight closure on ANY FLOW and in the most troublesome service. DeZurik Valves can't bind or seize, and the plug can't stretch or collapse. There's a model and size to handle anything piped. Write for complete catalog.

DeZURIK SHOWER CO.

Sartell — Minnesota

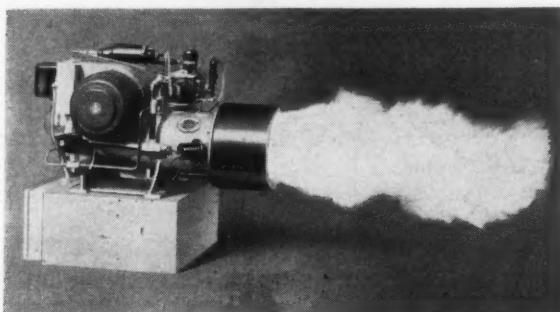
Made in England by
Millsbaugh, Ltd., Sheffield

When inquiring check CP 3822 on handy form, pgs. 2-3

Commercial burner incorporates separate tank which holds oil to lubricate air pump . . .

height of combustion cone makes it unnecessary to pit in front of boiler on most jobs

Two industrial burners have been introduced which are comparable in operation to the automatic domestic burners. Type AM5-H has capacity of 25 gph. Overall width of 20" permits practical side-by-side installations. Height of center of combustion cone to floor is 8½", which makes it unnecessary to pit in front of boiler on most jobs. Relay and motor starter are mounted in switch panel box. Convenient feature of unit is separate tank to hold oil used to lubricate the air pump. Power losses and lack of



Burner is shown at high fire stage

air due to slippage are averted by use of direct connected pancake motor. Use of electronic relay provides safe flame failure protection.

Type AM6-H has maximum capacity of 40 gph. In contrast to AM5-H, this model has larger oil pump, dry oven, air diffuser, and uses a three horsepower motor instead of two horsepower motor. Both burners furnish all combustion air under forced draft.

(Product of Cleaver-Brooks Co., Hev-E-Oil Burner Division, Dept. CP, 326 E. Keefe Ave., Milwaukee 12, Wis. . . or for more information check CP 3823 on handy form, pages 2 and 3.)

Where high temperatures on metal take their toll, coatings afford protection . . .

resist up to 1500°F or even 2000°F, and withstands salt spray of 1000-hr duration

Uses: For high temperature protection on metals such as industrial stacks, furnaces, ovens, exhaust systems, mufflers, manifolds, and other hot surfaces.

Features: Most of these coatings will resist temperatures up to 1500°F; special coatings give protection against temperatures up to 2000°F. Films resist salt spray or humidity for over 1000 hr.

Description: Silicone modified coatings of aluminum may be sprayed, dipped, or brushed on clean metallic surfaces and air dried or baked. After thorough drying, coatings resist all but concentrated acids. Cold dilute alkalis up to 10 per cent have little effect on the coatings, which also resist aliphatic solvents. In addition to the aluminum color, most standard shades are available.

(Development of the Raymond C. Crippen Research & Development Laboratories, Dept. CP, 1138 E. North Ave., Baltimore 2, Md. . . or for more information check CP 3824 on handy form, pages 2 and 3.)

ALL FORGED STEEL Edward INSTRUMENT VALVES

Lowest Cost Valves for Their Rating!



Standardize on Edward instrument valves—forged steel, yet their price is comparable to ordinary bar-stock valves.

Edward instrument valves are top-quality in every design detail—easy-grip T-handle . . . bronze yoke bushing . . . forged steel one-piece outside screw yoke . . . forged steel corrosion-resistant EValized packing gland . . . EValley 13% chromium stainless steel stem-disk with needle point for close flow control . . . forged steel EValized gland bolts that swing out of the way for easy repacking . . . heat resistant die molded EValpak packing.

And look at this versatility—

★ STEAM, WATER, OIL or GAS PRODUCT PROCESS LINES

Edward instrument valves fit into any piping system. Globe or angle, sizes ¼", ½", ¾" and 1".

★ HIGH TEMPERATURES or HIGH PRESSURES

Rated up to 6000 lb at atmospheric temperatures, or up to 1500 lb at 1000 F.

★ STANDARD or CORROSIVE SERVICE

Available in carbon steel or 13% chromium bodies and trim.

★ TYPICAL USES

Orifice Meters	Regulators
Instrument Panels	Gage Lines
Oil Field Xmas Trees	Drip and Drain Lines
Hydraulic Systems	Pressure Recorders
Vent Lines	Corrosive Lines

Get the full story on Edward instrument valves—the lowest cost valves for their rating. Write for Bulletin 491.

Edward Valves, Inc.

Subsidiary of ROCKWELL MANUFACTURING COMPANY

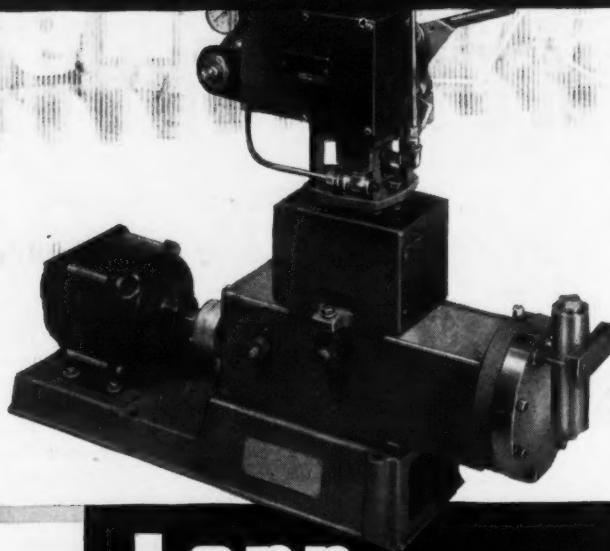
1230 WEST 144th STREET, EAST CHICAGO, INDIANA

EAST CHICAGO, INDIANA

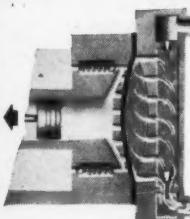


When inquiring check CP 3825 on handy form, pgs. 2-3

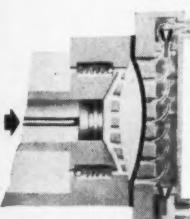
NO STUFFING BOX



Lapp Auto-Pneumatic PULSAFEEDER



INTAKE STROKE



DISCHARGE STROKE

No packing or other leak-likely gland can be in contact with chemical being handled by the Lapp Pulsafeeder. A hydraulically-balanced diaphragm acts as a floating partition, without mechanical load or pressure differential—assures isolation of chemicals being pumped from all working pump parts. Pumps against pressures to 2,000 lbs., at constant pumping speed—variable flow for continuous processing results from variation in piston-stroke length-controlled by instrument air pressure responding to any instrument-measurable processing variable.

WRITE FOR NEW BULLETIN No. 300, just issued. 24 pages of description, specifications, typical applications, flow charts.

Inquiry Data Sheet included from which we can make specific engineering recommendation for your processing requirement. Write Lapp Insulator Co., Inc., Process Equipment Division, 561 Maple Street, Le Roy, N. Y.



When inquiring check CP 3826 on handy form, pgs. 2-3

CONSTRUCTION

**Lubricates at temps
— either high
or low . . .**

an electrical conductor or resistor, depending on where used

Uses: Recommended particularly for moving parts subjected to extremes of temperature. Some suggested uses: air compressors, conveyors, diesel engines, push-pull controls, drying oven parts, and rubber tire molding equipment.

Features: Chemically inert; an electrical conductor or resistor, depending on where used.

Description: Synthetic Colloidal Graphite, a slippery dry lubricating solid, is marketed in 12 oz aerosol dispensers.

The material is a composition of microscopically fine particles of black and opaque synthetic graphite.

It is a good conductor of heat, gas absorbent, and possessed of a low coefficient of expansion. Specific gravity range is 2.00-2.25; Moh's hardness rating is less than 1.

(Manufactured by Reynolds Industries, Inc., Dept. CP, 4500 Euclid Ave., Cleveland 13, Ohio . . . or for more information check CP 3827 on handy form, pages 2 and 3.)

**Voltage tester design
decreases chance of
accident . . .**

indicator faces operator when in testing position

Uses: For electrical maintenance.

Features: Three coils in series, separated in insulating washers, minimize possibility of short circuit. The simplified two-part construction also makes it safe and easy to use. With indicator in full view while testing, fumbling is avoided in bringing scale into position.

Description: One part of instrument contains the three solenoid type coils with lead on one end and indicator with magnifying lens on the other. The second part is the smaller probe lead.

Approximate voltage indicated by the unit is:

AC scale—115-230-460-575
DC scale—125-250-600

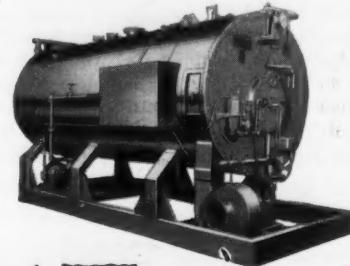
It is sturdy, compact, and comes with belt type carrying case.

(Product of Sittler Corp., Dept. CP, 18 North Ada St., Chicago 7, Ill. . . or for more information check CP 3828 on handy form, pages 2 and 3.)

AMESTEAM GENERATOR KNOCKS OUT HIGH STEAM COSTS!

10 - 500 h.p.
15# - 200# w.p.

★
OIL . . . GAS
or
OIL - GAS
Combinations



FUEL — 80% Guaranteed
Efficiency

LABOR — Minimum Attention
Required

WATCH FOR ME NEXT MONTH . . . MEANWHILE
WRITE FOR BULLETIN 1050

AMES IRON WORKS

BOX D-7, OSWEGO, N.Y.

Builders of Better Boilers since 1848

Manufactured under license in Canada by VOLCANO, Ltd., Montreal, P.Q.

When inquiring check CP 3829 on handy form, pgs. 2-3



SPRACO NOZZLES



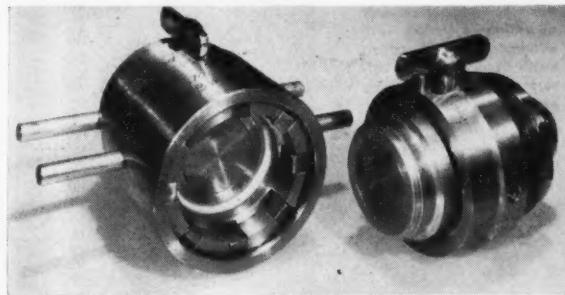
When inquiring check CP 3830 on handy form, pgs. 2-3

Report no leakage through coupling in transferring dangerous liquids to missiles or rockets . . .

coupling to two self closing valves can't be released until both valves are shut off

Uses: Transfer of dangerous or corrosive liquids. Nitric acid, titanium tetrachloride, and other dangerous fluids have been safely handled without losing a single drop when coupling was disconnected. In addition to fueling missiles and rockets, it has been used successfully on fuel lines between shipping container and storage tank.

Features: Two self closing valves, one in either half, fit flush with the ends. During fueling operations, valves prevent loss of fluid as well as entry of air. To safeguard



Coupling is shown separated into its two components

workers and material, coupling is designed so that it cannot be disconnected until both shutoff valves are turned.

Description: Coupling is made of stainless steel and is currently in production to fit $\frac{3}{4}$ and $1\frac{1}{4}$ " pipe sizes. It will withstand temperatures from 65 to 400°F.

(Product of E. B. Wiggins Oil Tool Co., Inc., Dept. CP, 3424 E. Olympic Blvd., Los Angeles 23, Calif. . . or for more information check CP 3831 on handy form, pages 2 and 3.)

Horizontal-rotary design of burner gives precision control, high efficiency . . .

unit will burn any grade of oil and at higher temperatures despite viscosity variations

Uses: Originally manufactured exclusively for manufacturer's steam generators, burners are now available for replacements or as new installations in commercial and industrial fields.

Features: Precise control of firing rates, flame contour, and automatic operation. Any grade of oil can be burned . . . at higher temperatures.

Description: Horizontal-rotary combustion units are equipped with: 1) V-belt drive for high cup speed for more efficient atomization, 2) four-hole hinge that circulates oil through oil heater so that oil is on pressure side of pump, allowing combustion at higher temperatures, 3) adjustable air nozzle for accurate control of flame contour, 4) dual pumps and reservoir combined with constant oil rate control for controlled firing, regardless of viscosity variation. Fully automatic in sizes to 500 bph with dual ignition, and Hi-low or fully modulating control, units are also available with combined gas burner for any gas.

(Development of Superior Combustion Industries, Inc., Dept. CP, 1475 Broadway, New York 18, N. Y. . . or for more information check CP 3832 on handy form, pages 2 and 3.)

JOHN CRANE **TEFLON**
"C-V" rings

First in preference in leading chemical plants everywhere!

because . . . Teflon "C-V" Rings withstand

1. Temperature from —94°F. to 482°F.

2. Any corrosive liquid or gas

Why repack with ordinary materials when chemically inert "John Crane" Teflon "C-V" Rings can seal any corrosive liquid or gas and resist extreme temperatures? Also, they have extremely low friction characteristics—will not shrink, swell, harden, dissolve, corrode or deteriorate. Ideal for use on all valve stems and reciprocating pumps as well as many centrifugal and rotary pump applications. Cross-section design allows effective sealing at finger tight gland pressure.

"John Crane" has developed a complete line of standard size Teflon "C-V" Rings and male and female adapter rings to meet practically every need. If you have special requirements, "John Crane" can mold additional sizes to fit your stuffing box requirements.

SEND FOR NEW CATALOG

This illustrated booklet "The Best in Teflon", contains everything you want to know about the many kinds of Teflon products made by "John Crane". Write today for your free copy.

"John Crane" Teflon "C-V" Rings are used in sets, the number of rings depending upon the stuffing box length and pressure encountered. In all cases, a minimum of two rings are recommended for a stuffing box, together with male and female adapters.

JOHN CRANE

PACKINGS

MECHANICAL SEALS

TEFLON PRODUCTS

LAPMASTER LAPPING MACHINE

PIPE SEALING COMPOUNDS

CRANE PACKING COMPANY
1821 CUYLER AVENUE • CHICAGO 13, ILLINOIS

When inquiring check CP 3833 on handy form, pgs. 2-3

If you pipe it...there's a
Fairbanks valve
to control it

FHere are two typical examples of the outstanding design, sound engineering and rugged construction that are built into every Fairbanks Valve. Years of experience in meeting all kinds of valve requirements for industry, have given Fairbanks Engineers a storehouse of knowledge in controlling the flow of water, steam, gas, oil, chemicals, etc. Consult them without obligation.

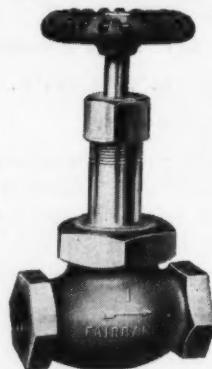


Fig. U-01
Renewable Composition Disc
Globe Valve - 150 lb. S.W.P.



Fig. 0236
UNION BONNET
— Renewable
Nickel Alloy Seat
Gate Valve —
200 lb. S.W.P.

THE
Fairbanks
COMPANY

General Offices:
393 LAFAYETTE STREET, NEW YORK 3, N.Y.

Branch Offices:
393 Lafayette St., N.Y. 3, N.Y. 520 Atlantic Ave., Boston 10, Mass.
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VALVES
DART & PIC UNIONS • TRUCKS • CASTERS

When inquiring check CP 3834 on handy form, pgs. 2-3

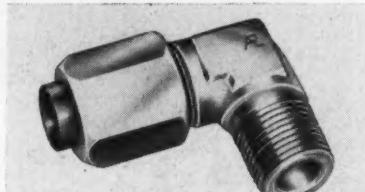
CONSTRUCTION

Announces production of
standard aluminum
tube fittings . . .

for industrial rather than aircraft applications

Uses: Industrial piping.

Features: Announcement is made of production of standard line of aluminum tube fittings. These are



Aluminum fittings in same design as
brass or steel

intended strictly for use in industrial plants rather than for aircraft.

Description: Triple-lok aluminum fittings are same design as those supplied in brass or steel by manufacturer. Line includes male and female connectors, elbows, tees, unions, and tube end reducers for $\frac{1}{4}$, $\frac{5}{16}$, $\frac{3}{8}$, and $\frac{1}{2}$ " OD tubing. Tubing in such alloys as B50S is readily available and has good workability characteristics.

(Announced by Parker Appliance Company, Dept. CP, 17325 Euclid Ave., Cleveland 12, Ohio . . . or for more information check CP 3835 on handy form, pages 2 and 3.)

Applies right over rust
without scraping or
wire brushing . . .

stated to resist temp changes,
chemicals, gases, moisture

Uses: On any kind of metal, indoors or outdoors.

Features: Resists temperature changes, industrial chemicals, gases and moisture.

Description: Known as Apex Aluminum Anti-Rust Paint, the product can be applied right over rust without wire brushing or scraping. When applied over rusted surfaces, it is reputed to penetrate and seal the surface and stop further rust action. When used on clean new metal, it is said to protect and preserve against future rust attacks. Company states that the paint assures a brilliant, attractive, lasting finish and provides complete one-coat coverage.

(A product of Paramount Industrial Products Co., Dept. CP, University Center Station, Cleveland 6, Ohio . . . or for more information check CP 3836 on handy form, pgs. 2 & 3.)

LEE
Corrosion-Resistant
HEAVY DUTY
Kettles

Lee Kettles are available in standard and special designs in capacities up to 500 gallons. They are easy to clean and keep clean, meet all sanitary regulations and are built to conform with the A.S.M.E. Code. Hydraulic operating cylinders are available with all tilting kettles and tilting agitators for safe pouring and cleaning.

May we send you our descriptive technical bulletins?

**LEE Metal Products
Company, Inc.**

418 PINE ST. PHILIPSBURG, PA.

When inquiring check CP 3837 on handy form, pgs. 2-3



Jam-packed with cost-cutting, efficiency-boosting characteristics, the Johnson Joint offers exciting possibilities you should know about. It's a packless, self-lubricating and self-adjusting way to get heating or cooling agents in or out of rotating machine parts; used on calenders, dryers, ironers, mills and similar machines. There are hundreds of design and production problems for which it holds the perfect answer.

Write for complete literature

The Johnson Corporation

826 Wood St., Three Rivers, Mich.

When inquiring check CP 3838 on handy form, pgs. 2-3

Centrifugal's unbalanced loads can be 3 to 4 times heavier than previously . . .

redesigned machine requires less care in loading, fewer stops for load redistributing

Redesigned center-slung centrifugal shown here, the model IBI, can handle unbalanced loads three to four times greater than previous models. This means that less care is needed in loading the machine and few stops are required to redistribute the load. Spindle is mounted in



Redesigned center-slung centrifugal

roller and double-row ball bearings in a new type of tubular housing. Unit has slanting bottom for faster, more complete drainage, a new self-energizing brake, and more compact motor mounting.

Machines are available with split or full cover, and can be of fume-tight construction. Basket, case, and cover can be made of any practicable material. Single-speed or two-speed motor drive or infinitely variable-speed hydraulic drive can be specified. Basket sizes range from 12 through 108" diameter.

(Development of Tolhurst Centrifugals Division of American Machine and Metals, Inc., Dept. CP, East Moline, Ill. . . or for more information check CP 3839 on handy form, pages 2 and 3.)

Acids, caustics, and solvents are pumped safely with plastic packing . . .

reported successful when centrifugal pumps operate at 3500 rpm

Extruded plastic packing has been designed for use in centrifugal pumps or difficult packing operations and is said to resist acids, caustics, and hard-to-handle solvents.

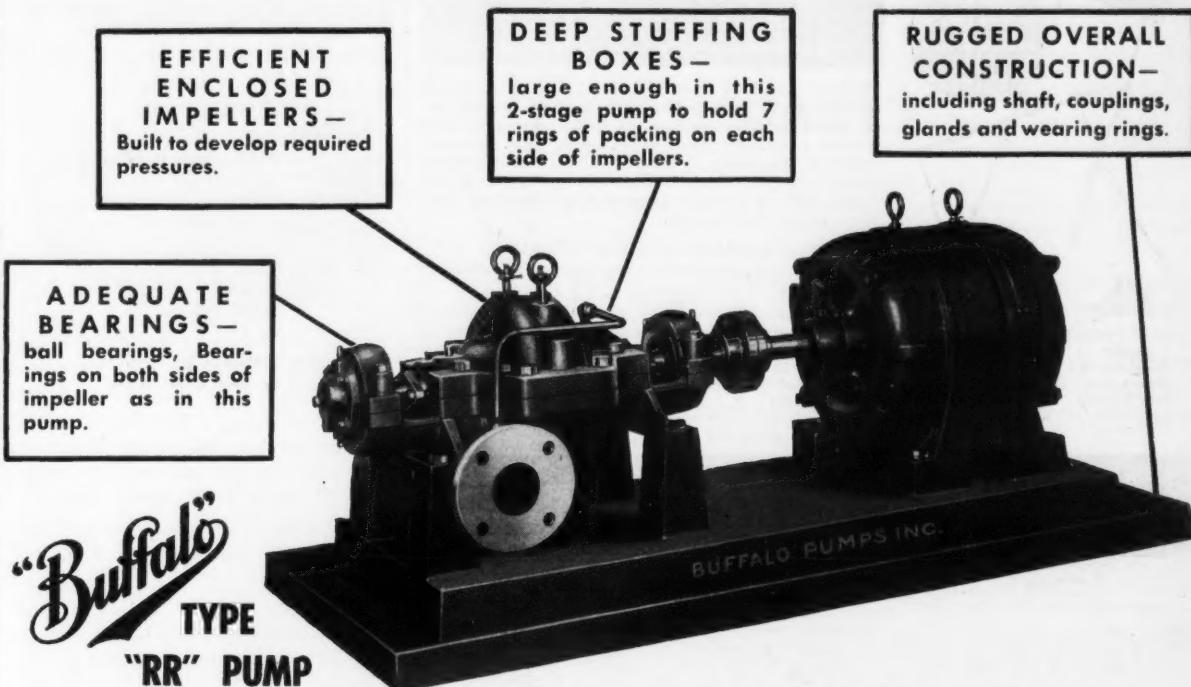
Manufacturer reports product has been successfully used in centrifugal pumps operating from low rpm's to 3500 rpm and higher. Called Teflon Plastic Packing #403, it is composed of shredded Teflon, blue asbestos, and suitable binders and lubricants. Packing is extruded into an open cotton yarn jacket which confines it and makes installation easy.

(Development of Packing Division, Flexrock Co., Dept. CP, 3611 Filbert St., Philadelphia 4, Pa. . . or for more information check CP 3840 on handy form, pages 2 & 3.)

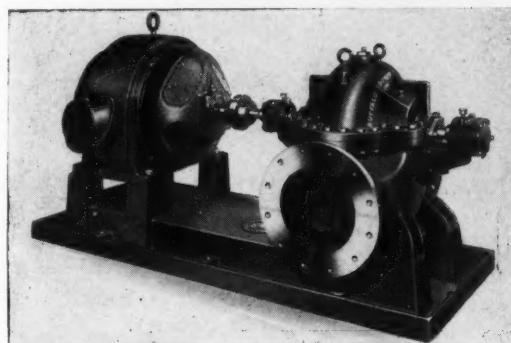


Tips on Better Pumping

What To Look For In Choosing A Clear Water Pump



"Buffalo" TYPE "RR" PUMP



"BUFFALO" TYPE "SL" PUMP

The Pump specified for many of the best-known air washers and air conditioning systems including chilled water service, the "Buffalo" Type "SL" Double Suction Pump is one of our best built models, and is available in capacities from 10 to 10,000 gpm.

This "Buffalo" Pump is built in both 2- and 4-stage models for handling clear water at pressures as high as 500 pounds, any temperature. A highly efficient pump, it is widely used for boiler feed service. Like every "Buffalo" Pump, it is given a complete test run under actual expected operating conditions before shipment to the customer. If you are interested in a clear water pump that will give you lifetime service with a minimum of trouble and attention, specify an "RR".

For complete data on "RR" Pumps, request Bulletin 980-C and for information on "SL" Pumps, let us mail you Bulletin 955-P.



BUFFALO PUMPS INC.

524 BROADWAY

Canada Pumps Ltd., Kitchener, Ont. Sales Representatives in all Principal Cities

BUFFALO, NEW YORK

A BETTER CENTRIFUGAL PUMP FOR EVERY LIQUID

When inquiring check CP 3841 on handy form, pgs. 2-3

HIGH PRECISION *Thermistors* from a high precision source



made to your order for
resistance values • size
temperature coefficient • mountings • quality

Widely useful as temperature measuring elements and as liquid level sensors, these temperature responsive resistors are built by Bendix-Friez under a system of quality controls set up to meet exacting military standards of accuracy. You can count on them as the very best obtainable, whether purchased from stock or made to your own specification. Ask for a list of applications.

STANDARD TYPES IMMEDIATELY AVAILABLE

Size (inches)	@ +30°C.	@ 0°C.	@ -30°C.
.140 x 3/4	45 ohms	88 ohms	193 ohms
.040 x 1.5	14,000 ohms	29,946 ohms	74,676 ohms
.018 x 1.5	40,000 ohms	94,040 ohms	262,400 ohms

Write for details to Dept. L

FRIEZ INSTRUMENT DIVISION of
1324 Taylor Avenue • Baltimore 4, Maryland
Export Sales: Bendix International Division, 72 Fifth Ave., N. Y. 11, N. Y.



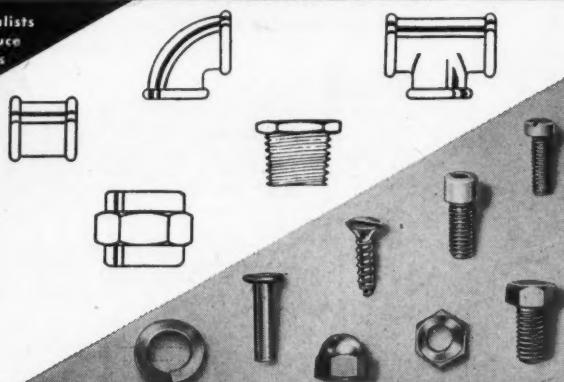
When inquiring check CP 3842 on handy form, pgs. 2-3

FOR YOUR STAINLESS STEEL FITTINGS AND FASTENERS

IT'S ALLMETAL FOR QUALITY AND DELIVERY

Allmetal's fasteners and fittings are stocked in types 304 and 316.
Specials to order. All made right by Allmetal.

ALLMETAL, Specialists in Stainless, Produce Stainless Products Exclusively.



WRITE FOR CATALOG U



MANUFACTURERS SINCE 1929
ALLMETAL
SCREW PRODUCTS COMPANY, INC.
33 GREENE STREET NEW YORK 13, N. Y.

When inquiring check CP 3843 on handy form, pgs. 2-3

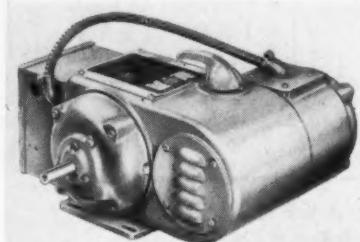
CONSTRUCTION

Control dial changes motor speed without stopping . . .

eliminates external speed changing device or box

Uses: For general power requirements up to $\frac{3}{4}$ hp.

Features: By turning convenient control dial, motor's speed can be instantly changed to desired speed



Control dial may be seen at top of variable speed motor

without stopping. Eliminates necessity of any external speed changing device or box, and occupies less room than standard fixed speed motor.

Description: Single phase variable speed motor is made in $\frac{1}{4}$, $\frac{1}{3}$, $\frac{1}{2}$, and $\frac{3}{4}$ hp.

It provides speeds in 10:1 ratio with range from 4 to 10,000 rpm. Motors may be used on 110 or 220 v power source.

(Product of U.S. Electric Motors Inc., Dept. CP, Box 2058, Los Angeles 54, Calif. . . or for more information check CP 3844 on handy form, pages 2 and 3.)

Better wear resistance is credited to finish . . .

withstands alkali, hot and cold water, or alcohol

Uses: As a clear interior varnish for floors or furniture.

Features: Floors stand up under scuffing and general hard use when coated with finish. It is also highly resistant to alkali, extremely hot or cold water, and alcohol.

Description: "Dulux" clear interior finish flows from brush without excessive cross-brushing and without "picking up." It dries tack-free in $2\frac{1}{2}$ hours when applied over clean surface and is ready for recoat in 6 hours.

(Product of E. I. DuPont de Nemours & Co., Inc., Dept. CP, Wilmington 98, Del. . . or for more information check CP 3845 on handy form, pages 2 and 3.)

look into

Spray Drying

for chemical processing

Have you considered how spray drying might improve your product and widen your markets? Here's a book to tell you more on Swenson equipment and engineering... ask for your copy now!

SWENSON EVAPORATOR CO.
15667 Lathrop Avenue, Harvey, Illinois

SWENSON

Proven Engineering for the Process Industries
SINCE 1898



When inquiring check CP 3846 on handy form, pgs. 2-3

Smooth Vibrationless PROPELLERS

for MIXING, STIRRING, AERATING, PUMPING AGITATION



A Michigan 34" Stainless Steel propeller with split hub for mounting in receptacle through manhole.

Manufactured by an exclusive process, Michigan propellers are perfectly balanced to avoid whip and strain on shafts. They are available for original equipment, replacement or special application in a wide range of materials and in sizes up to 60". Write for latest data folder.

MICHIGAN WHEEL CO.
GRAND RAPIDS 3, MICHIGAN

When inquiring check CP 3847 on handy form, pgs. 2-3

Removes 99% of all entrainment from steam, other vapors . . .

internal purifier keeps constant efficiency as velocity through it increases

Uses: Removes dirt, moisture, riser discharge, and solids from steam and other vapors. Purifier is installed in an auxiliary tank immediately above evaporators, packed towers, deodorizers, stills, bubble-cap towers (see sketch), and inside steam drums, flash tanks, receivers, and other vessels.

Features: Will remove 99% of all entrainment. Separating efficiency is said to remain constant as velocities through the unit increase.

Description: Removal of foreign matter is accomplished

by means of a multistage centrifugal element which engages the entrainment-laden vapor at the top of the purifier as far away from the liquid level in the drum as possible. Cleaned stream passes on through outlet while foreign matter discharges to drain.

Although the unit illustrated is designed for downflow service, upflow purifiers are also available. The purifiers can be made of steel, stainless steel or other alloys, in outlet sizes from 4 to 24" and furnished with slip joint connections. Connections in sizes up to 10" can be threaded if desired.

(Internal Downflow (or Upflow) Hi-eF Purifiers are made by The V. D. Anderson Company, Dept. CP, 1935 W. 96th St., Cleveland 2, Ohio . . . or for more information check CP 3848 on handy form, pages 2 and 3.)

Noise intensity decreased to 1/3 former level by design of centrifugal fan . . .

efficiency is boosted to 92%, an increase of 8% over earlier models

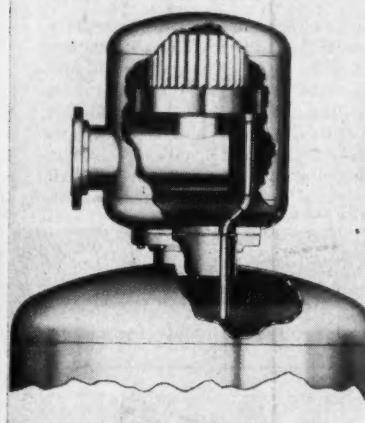
Uses: For process buildings or power houses.

Features: Noise level has been lowered 5 decibels to 1/3 that of previous models by changed design of centrifugal fan. Improvement in mechanical efficiency of 8 percentage points to 92% has also been achieved.

Description: Advantages noted in centrifugal fan with "Airfoil" design have resulted from changes in blade construction along with aerodynamic alterations in inlet and casing.

Wheel sizes range from 40 $\frac{1}{4}$ to 108 $\frac{3}{4}$ inches diameter. Unit is capable of delivering volumes up to 600,000 cubic feet per minute.

(Announced by Westinghouse Electric Corporation, Sturtevant Division, Dept. CP, 200 Readville St., Hyde Park, Boston 36, Mass. . . or for more information check CP 3849 on handy form, pages 2 and 3.)



Upflow purifier installed in auxiliary vessel atop larger tank

of steel, stainless steel or other alloys, in outlet sizes from 4 to 24" and furnished with slip joint connections. Connections in sizes up to 10" can be threaded if desired.

(Internal Downflow (or Upflow) Hi-eF Purifiers are made by The V. D. Anderson Company, Dept. CP, 1935 W. 96th St., Cleveland 2, Ohio . . . or for more information check CP 3848 on handy form, pages 2 and 3.)

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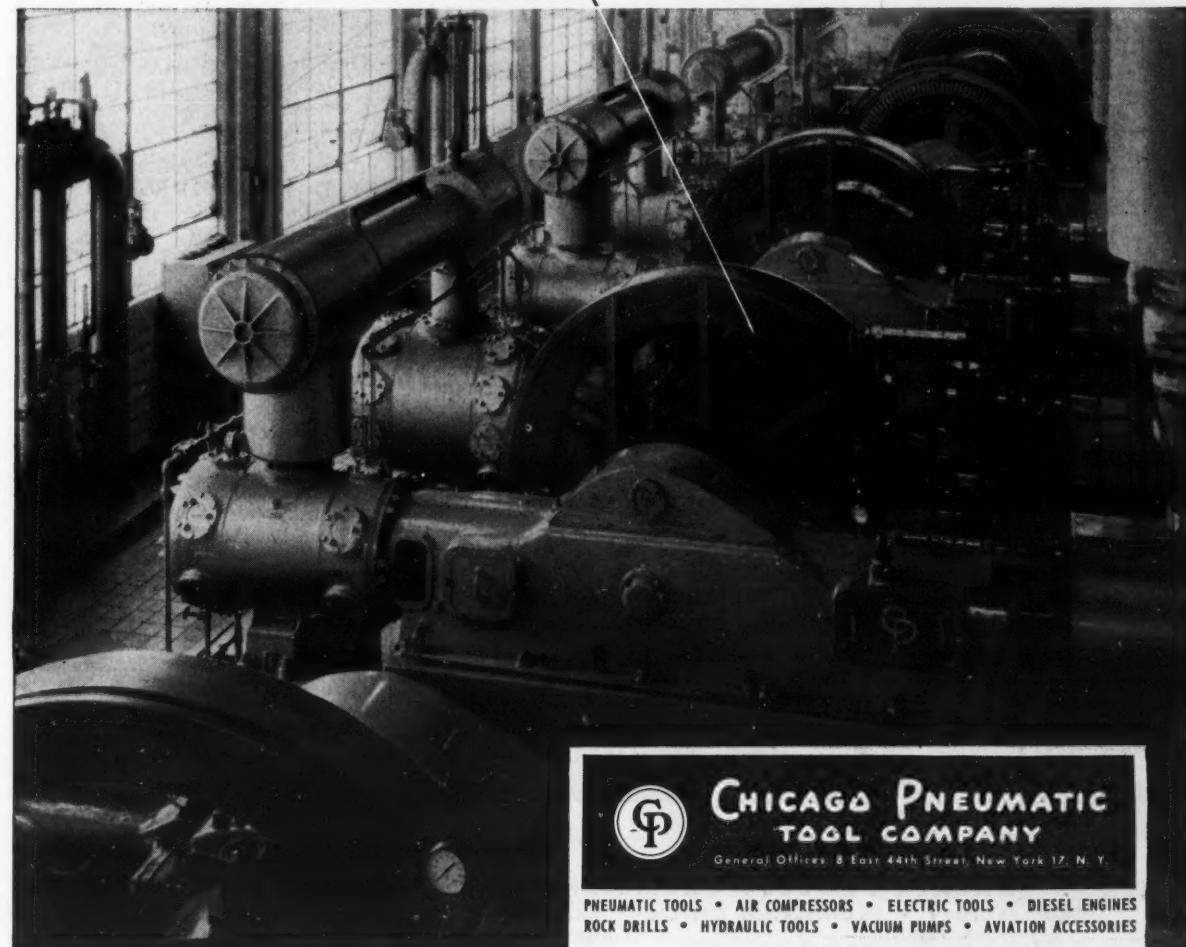
20,000 c.f.m.
at
110 lbs.
pressure

All air requirements of a big automotive plant are met by this battery of five CP horizontal duplex compressors, with a total capacity of 20,000 c.f.m. at 110 lbs. pressure.

The three Type H-DSC steam-driven and two Type O-CE motor-driven units permit a flexibility of operation that assures a dependable supply of air at all times with maximum economy.

Steam-driven compressors are particularly desirable, alone or in combination with electric-driven compressors, where exhaust steam can be utilized for process work or for heating.

Write for complete information



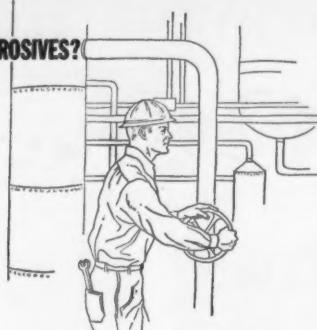
**CHICAGO PNEUMATIC
TOOL COMPANY**

General Offices: 8 East 44th Street, New York 17, N. Y.

PNEUMATIC TOOLS • AIR COMPRESSORS • ELECTRIC TOOLS • DIESEL ENGINES
ROCK DRILLS • HYDRAULIC TOOLS • VACUUM PUMPS • AVIATION ACCESSORIES

When inquiring check CP 3850 on handy form, pgs. 2-3

HANDLING CORROSIVES?



Here's what you should know about LEAD

Dependable under extremely corrosive conditions . . . under many pressures, concentrations and temperatures . . . lead is the ideal material for handling sulphuric, sulphurous and chromic acids. In the chemical, textile, petroleum and metallurgical industries . . . wherever reliable control of strongly corrosive harsh-acting materials is imperative, lead can be used safely.

For complete technical assistance with your corrosive-handling problem, write to Federated's *Corrosion Advisory Service*. It is at your service. For lead products, use ASARCO Brand lead pipe, lead sheet, and lead fittings. Available in all standard sizes and forms through Federated's 22 sales offices across the country.



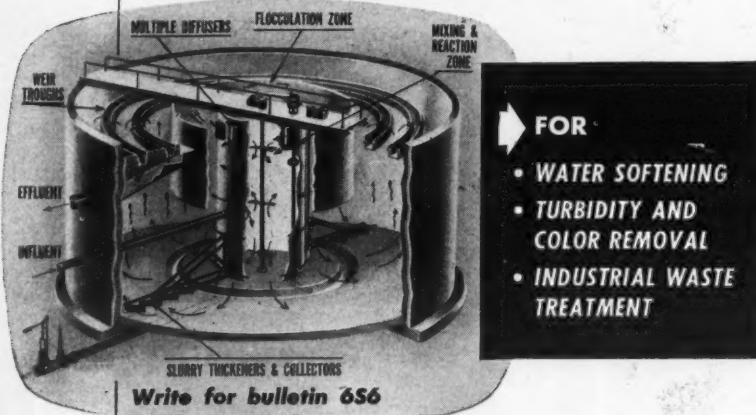
Federated Metals Division

AMERICAN SMELTING AND REFINING COMPANY • 120 BROADWAY, NEW YORK 5, N. Y.

When inquiring check CP 3851 on handy form, pgs. 2-3

the CLARIFLOW PROVIDES IMPROVED EFFLUENT Higher Filtration Rates... Longer Filter Runs... Better Industrial Waste Recovery and Treatment

These advantages are due to Clariflow's control over short-circuiting, control of each function and control of sedimentation through low weir rates.



WALKER PROCESS EQUIPMENT INC.
FACTORY • ENGINEERING OFFICES • LABORATORIES
AURORA, ILLINOIS
PROCESS EQUIPMENT

When inquiring check CP 3852 on handy form, pgs. 2-3

CONSTRUCTION

Aids water resistance of concrete and plaster . . .

minimizes heat loss thru floors, walls or ceilings

Uses: In lightweight concrete or plaster mixes.

Features: In portland cement mixes, according to manufacturer, it reduces surface tension of the water, promotes hydration reaction, increases yield, and improves workability of the concrete without decreasing the strength.

Description: Use of Fluresit Cement Waterproofing Powder in lightweight insulating aggregates for roof decks, walls, ceilings or floors assures a more water-resistant finish. It is claimed that capillary "wicking" of moisture into hardened concrete is prevented, thus minimizing heat loss.

Manufacturer also states that on floor slabs integrally waterproofed with Fluresit Powder, there will be no loosening or buckling of asphalt tile or linoleum, or saponification, blistering or peeling of paints.

When added to lightweight concrete or plaster, Fluresit renders the mix so waterproof that hardened slabs will actually float on water.

(Available from American Fluresit Co., Dept. CP, 4011 Red Bank Road, Cincinnati 27, Ohio . . . or for more information check CP 3853 on handy form, pages 2 and 3.)

Masonry requires only one coating of this paint . . .

is decorative and protective in all kinds of weather

Uses: As decorative and protective coating against moisture infiltration on interior or exterior surfaces of concrete block, cement, brick, stucco, asbestos cement siding, and similar masonry surfaces.

Features: Of heavy consistency but easily brushed, coating has excellent hiding qualities and withstands severe weather and temperature changes.

Description: Mason Coat 310 is an oil-base paint that performs a two-fold duty and may be brushed or sprayed over new masonry or surfaces that have been previously painted. Is available in white and several attractive tints.

(Product of the United Laboratories, Inc., Dept. CP, 16801 Euclid Ave., Cleveland 12, Ohio . . . or for more information check CP 3854 on handy form, pages 2 and 3.)

Repair
RUSTED
and
DAMAGED
Threads



Buckingham Thread Restorer

Now — no more drilling or hack sawing to replace damaged male threads! Buckingham Thread Restorer eliminates flats and nicks — cleans heavily rusted and corroded threads on studs, bolts, pipes, threaded shafts.

Simple — quick. Just slip on a Buckingham Thread Restorer at bottom of damaged area and back-off. Jaws adjust to any pitch — SAE, ASME, pipe or tapered. One tool handles many sizes . . . no die sets needed!

Eight models for $\frac{1}{4}$ " to 6" threads. Write for free folder and name of nearest dealer.

BUCKINGHAM MANUFACTURING CO., INC.
51-53 Travis Street
Binghamton, N. Y.

When inquiring check CP 3855 on handy form, pgs. 2-3



BURNS CLEAN

WITH NATIONAL AIROIL TYPE "S-A-D" BURNERS

... waste material is pumped directly to the burner and mixed with fuel oil in the burner body; insures ease and stability of ignition; eliminates stack solids; uses steam or compressed air for atomization; functions entirely on fuel oil where supply of waste material is intermittent; and assures continuous operation without cleaning or clogging. Bulletin 21 gives complete details.

NATIONAL AIROIL
BURNER COMPANY, INC.

1300 East Sedgley Ave., Philadelphia 34, Pa.
Southwestern Division: 2512 So. Blvd., Houston 6, Tex.

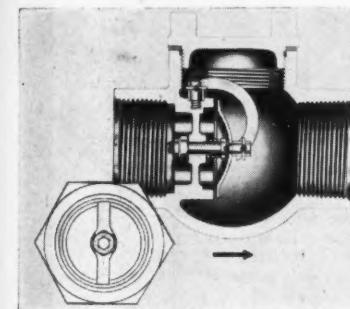
When inquiring check CP 3856 on handy form, pgs. 2-3

Permits unrestricted flow
of gas at negligible
pressure drop . . .

push-rod lessens likelihood of disc sticking to valve seat when foreign materials are present

Uses: As safety check valve for gas lines where gas and air are pre-mixed.

Features: Callahan valve has spring-tensioned push-rod which holds aluminum disc slightly off the valve seat except in case of reverse flow. This insures gas flow to maintain pilot lights. It also minimizes possibility of disc sticking to valve seat when oil, tar or foreign materials are present, or after valve has been closed due to temporary back-pressure.



Sectional view (right) shows push-rod feature that prevents sticking. Line drawing (left corner) shows centered web that houses push-rod.

Description: Unit is horizontal, disc type, back-pressure check valve. It can be supplied with either aluminum or stainless steel discs, depending on back-pressure requirements up to 125 psi.

Valve permits unrestricted flow of gas at negligible pressure drop with light weight disc in full open position at pressures as low as 1" water column. Swing type check valve designed for water or steam has relatively heavy seat disc and will not open at normal low gas operating pressures.

(Product of The Henry Flow Control Co., Division of Henry Valve Co., Dept. CP, Melrose Park, Ill. . . or for more information check CP 3857 on handy form, pages 2 and 3.)

Process yields clean surface plus resistance to corrosion

Fifteen-page house organ outlines chemical process for surface conditioning of ferrous metal, sheets, castings, and finished machined parts. Process is said to provide clean surface that will withstand electrolysis of atmosphere for longer period of time than other cleaning or phosphatizing processes.

According to the report, the procedure affords corrosion control during assembly or temporary storage of metals under cover.

Applications relate to fabricating and processing industries as means of conditioning surface of metals between operations as well as prior to finishing the product. Process is said to assure ideal surface for application of finish coating and maintain durable bond with the metal. Photographs show several processed articles, and booklet concludes with case history of process when applied to aluminum core dryers for large foundry. "Surface Conditioning Topics" is issued by Nielco Laboratories, Dept. CP, Box 4703, Detroit 19, Mich. When inquiring specify CP 3858 on handy form, pages 2 and 3.

Chlorine is Tamer with these CRANE Valves

... Designed to handle water-free chlorine, gas or liquid, up to 300°F.

Your best valves for handling chlorine are those made expressly for this service. It's too tough for ordinary equipment.

Rugged Construction

You'll operate more safely, efficiently, and dependably with these Crane Chlorine Valves. Their rugged forged steel construction gives you protection against internal and external shock. You'll have freedom from bonnet joint leakage with their strong Crane bolted design.

Effective Corrosion Resistance

You'll be equipped for highest resistance to corrosion with the Hastelloy "C" disc and seat rings, and the Monel stem. A corrugated soft Monel gasket prevents corrosion and leakage at the bonnet joint.

Literature Free on Request

The many refinements of Crane Chlorine Valves assure not only more efficient chlorine control, but important savings on valve maintenance and replacement costs. Get the complete facts in Circular AD-1608. Write or ask your Crane Representative for a copy.

The Complete Crane Line Meets All Valve Needs. That's Why

More Crane Valves Are Used Than Any Other Make!

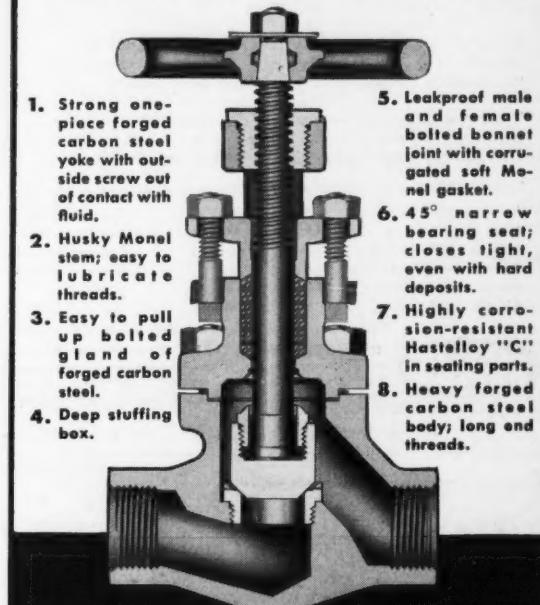
CRANE VALVES

CRANE CO., General Offices: 836 S. Michigan Ave., Chicago 5, Illinois
Branches and Wholesalers Serving All Industrial Areas

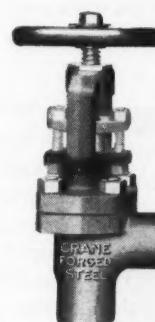
VALVES • FITTINGS • PIPE • PLUMBING • HEATING

When inquiring check CP 3859 on handy form, pgs. 2-3

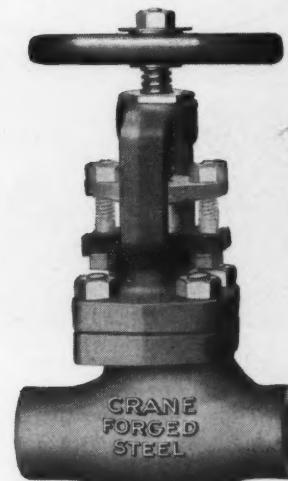
EVERY FEATURE WORKS FOR YOU



No. 1644 Globe
Sizes 1/2 to 2 in.



No. 1645
Angle
Sizes
1/2 to 2 in.



YOU NAME
THE LIQUID . . .



WILL MEASURE IT
WITH XACTO

... "the meter that changed
chemical processing habits!"

For over a quarter century Bowser Xacto meters have brought to the chemical industry an entirely new way to measure liquids accurately and dependably.

Wherever accurate measurement is essential to assure uniformity of product and control costs . . . there you will usually find Bowser Xacto meters on the job.

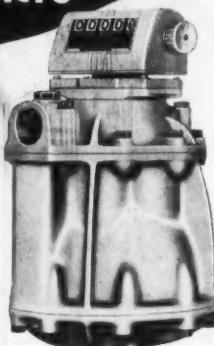
Today XACTO meters are handling these and 638 other liquids . . .

Acetic Anhydride	Amyl Acetate	Carbolic Acid
Alum Solution	Anhydrous Ammonia	Cellulose Acetate
Ammonium Chloride	Aqueous Ammonia	Copper Nitrate
Ammonium Nitrate	Arsenic Acid	Copper Sulphate
Ammonium Phosphate	Butyl Acetate	Cresol
Ammonium Sulphate	Calcium Bisulphite	Cresylic Acid
		Tannic Acid

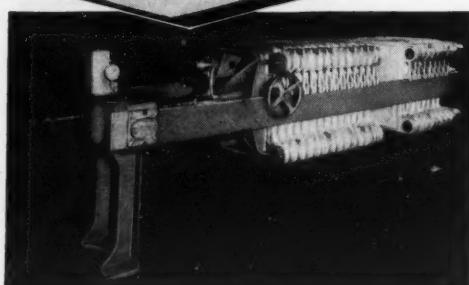
MAY WE SEND COMPLETE DATA?

BOWSER, INC., 1315 Creighton Avenue, Fort Wayne 2, Ind.
Regional Offices • Atlanta • Chicago • Cleveland • Dallas • Kansas
City • New York • San Francisco • Washington, D. C. • Hamilton, Ont.

When inquiring check CP 3860 on handy form, pgs. 2-3



Need Help
on Your
Filtration
Problems?



Shriver side feed, closed discharge, washing type filter press with "Hydro-Kloser" quick closing mechanism.

For dependable, economical filtration, we repeat, "Your best bet is a Shriver Filter Press." Catalog 52 proves it. Write for a free copy.

T. SHRIVER & COMPANY, Inc.

846 Hamilton St.
Harrison, N. J.

When inquiring check CP 3861 on handy form, pgs. 2-3

CONSTRUCTION

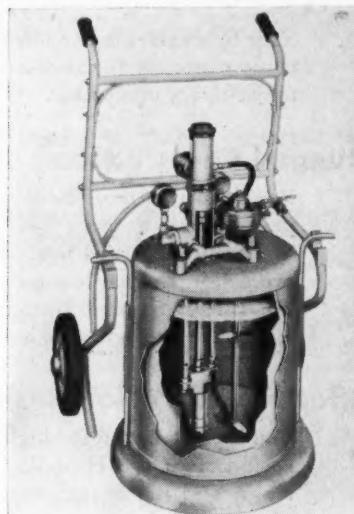
Paint pump works well
with multiple sprays
or long lines . . .

hand truck with rubber tires
facilitates movement

Uses: Plant maintenance painting.

Features: Satisfactory pressure is maintained by pump even when several spray guns or long lines are used in cold weather. Hand truck allows use as a portable sprayer. Large wheels with rubber tires enable one man to easily move it from one place to another. Truck disengages from pump for stationary operation.

Description: Spray gun supply pump is air-operated, double-action, reciprocating unit. It has 10 gal capacity and can work directly from original containers. Air-operated, dual-bladed



For stationary operation, truck disengages from trunnion arms

agitator is independent of pump. Aluminum (non-sparking) blades are adjustable to any depth. Since air pressure is not exerted on material, aeration is reduced to a minimum. Ten gal liner container is provided for special mixing conditions.

(Product of Gray Company, Inc., Dept. CP, 1012 Sibley Street, Minneapolis 13, Minn. . . or for more information check CP 3862 on handy form, pages 2 and 3.)

Aftercooler increases
cooling capacity
25 to 75% . . .

features improved distribution
of compressed air

Uses: In after-cooling operations
for compressed air or gases.

Features: Increased cooling capacity
by improved distribution of com-

WANTED

Jobs TOO TOUGH for Ordinary
Low Temperature Cabinets

Do you need
accurate de-
pendable tem-
perature con-
trol as low as
minus 90° F.
under difficult
conditions?

HUDSON BAY® Hor-
izontal Utility Cab-
inets surpass highest
industry and go-
vernment stand-
ards on such opera-

tions as materials and equipment
testing, shrink fitting, gauge seasoning, rivet
cooling, cloud and pour testing and storage
of metals and pharmaceuticals. Units are now
available in 3, 6 and 9 cu. ft. sizes with tem-
perature ranges to minus 40°, minus 60° and
minus 90° F.

Model No.
660 H

Write today, outlining your requirements.

REFRIGERATION SYSTEMS, INC.

'Pioneer Temperature Control Engineers'
Division C, 646 W. Washington Blvd., Chicago 6, Ill.

When inquiring check CP 3863 on handy form, pgs. 2-3



*All Electric
Floatless...*

LIQUID LEVEL CONTROLS



**FIRST and FOREMOST
IN THE FLOATLESS
CONTROL FIELD**

Control variations in levels
from $\frac{1}{4}$ " upward. Remote
control if desired — any dis-
tance. Controls unaffected by
acids, caustics, pressures or tem-
peratures.

Since 1933 B/W Controls have
provided positive, dependable,
economical liquid level control.
No floats! No vacuum tubes!
No moving parts in liquid.

WRITE FOR CATALOG

**B/W CONTROLLER
CORPORATION**

Birmingham, Michigan
2204 E. Maple Road

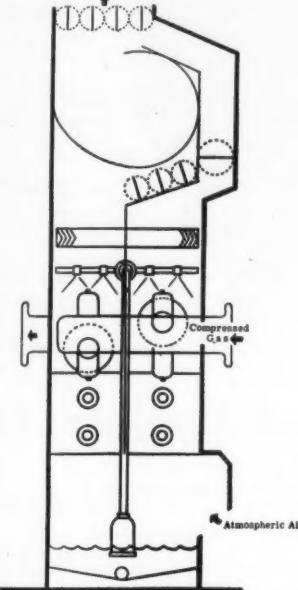
When inquiring check CP 3864 on handy form, pgs. 2-3

CHEMICAL PROCESSING

CONSTRUCTION

pressed air and by increase in amount of evaporating surface. This increase may range from 25 to 75% over previous models.

Equipment is designed for installation outdoors to provide cleaner compressed air and save space in buildings.



Arrows indicate path of compressed air and upward path of atmospheric air

Freezing is prevented in winter by automatic control which shuts off freezing cold air from spray chamber. Unit consumes less than 5% of cooling water required by conventional aftercoolers.

Description: Cooling is done by evaporation of re-circulating water sprays on surface of tubes through which the compressed air passes. Tube sizes have been increased to reduce friction.

Cooling medium is air at the atmospheric wet bulb temperature, which is cooler than average summer temperature of surface cooling water. Unit removes more moisture from compressed air than aftercoolers using surface water. Condensation in air lines and damage to pneumatic tools is prevented since compressed air is always cooled below atmospheric dry bulb temperature.

(Product of Niagara Blower Company, Dept. CP, 405 Lexington Ave., New York 17, N. Y. . . or for more information check CP 3865 on handy form, pages 2 and 3.)

For more information on product at right, specify CP 3866 . . . see information request blank between pages 2-3.

TAKE NO CHANCES WITH SLIGHT LEAKAGE

APPLICATION: Where even slight leakage of a flowing medium might become obnoxious, dangerous or excessively expensive.

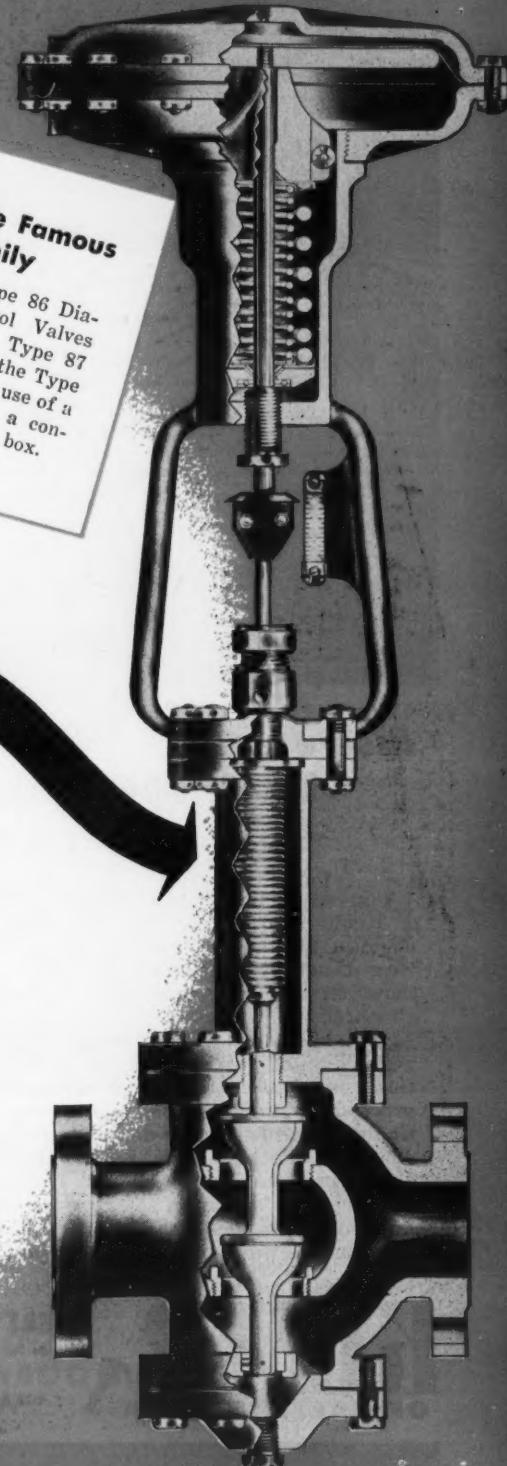
Specify

BS & B CLIMAX

Type 87 Diaphragm Control Valves

... with bellows sealed stem

From The Famous Family
of Climax Type 86 Diaphragm Control Valves . . . the NEW Type 87 . . . identical to the Type 86 except for the use of a bellows seal plus a conventional stuffing box.



Constantly striving to improve an already satisfactory item—that's part of the BS&B policy, part of our way of doing business. For example, take BS&B Climax Type 86 Diaphragm Control Valves of which the Type 87 is a family member. All Climax Type 87 valve bodies are designed to conform to I. S. A. tentative face-to-face standards. New designs continue to feature BS&B's interchangeability-of-parts advantage for greater operating and maintenance economy.

Type 87 is manufactured for all services and in all materials that are contemplated by Type 86 and in sizes from $1/2"$ to $6"$. Bellows can be supplied in bronze, stainless steel, Monel, Hastelloy "B", Nickel or other special alloys suitable. Maximum working pressure 400 lbs. cwp. The conventional teflon packed stuffing box is installed at the point the valve stem passes out of the bellows casing to forestall any appreciable loss of flowing medium in case of bellows failure.

Ask your BS&B MAN...33 Branches...13 Sales Offices...Ask for New Climax Catalog Section 105—recently revised—or write Black, Sivalls & Bryson, a leader for 60 years in oil and gas producing and refining equipment...out in front with controls and equipment for the processing industries.

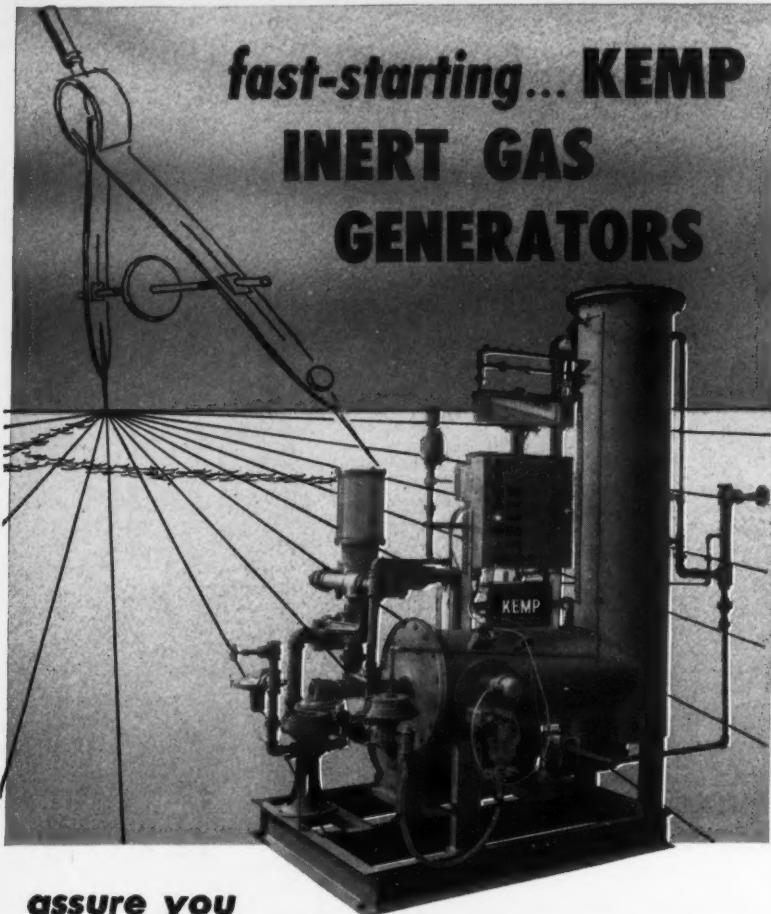


BLACK, SIVALLS & BRYSON, INC.

Climax Controls Division, Dept. 4-M7

7500 East 12th St.

Kansas City 3, Missouri



fast-starting... KEMP INERT GAS GENERATORS

assure you
chemically clean inert
gas at a specific analysis

PERFORMANCE reports from Kemp users throughout the chemical field show: Kemp Inert Gas Generators produce and maintain a *specific analysis* of chemically clean inert gas *regardless* of demand. Eliminate the possibility of mixture fluctuations at some critical phase of processing... offer the *best* selection of versatile, flexible designs. And in addition, each Kemp Generator is engineered for fast-starting, easy operation so as to save you both time and money spent on the warm-up periods.

KEMP
OF BALTIMORE

INERT GAS GENERATORS

Write for Bulletin I-10 for technical information

THE C. M. KEMP MFG. CO.
405 E. Oliver Street, Baltimore 2, Md.

CARBURETORS • BURNERS • FIRE CHECKS • ATMOSPHERIC & INERT GAS GENERATORS
DESCRIPTIVE DRYERS • METAL HEATING UNITS • SPRAYING EQUIPMENT • SPECIAL EQUIPMENT

When inquiring check CP 3867 on handy form, pgs. 2-3

CONSTRUCTION

Mercury safety switch for use in hazardous locations . . .

selector knob or push-button actuates switch

Uses: For positive safety in hazardous, explosive locations.

Features: Any possibility of spark is eliminated because of all-mechanical nature of actuating linkage. Switch

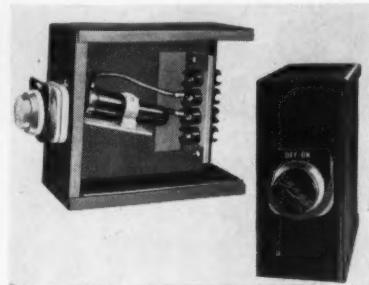


Photo shows details of both push-button and selector type mercury switches

is set in operation either by a selector knob or by a push-button which inclines the armature.

Description: Hermetically sealed mercury switch, mounted on lever-operated armature, is the operating heart of unit. Designed for vertical panel mounting, switch is single-pole model with either single or double-throw action.

Push-button models have spring which returns switch to original position when finger pressure is released. Selector type switch can be set at any time in either "on" or "off" position.

(Product of Tigerman Engineering Company, Dept. CP, 4332 N. Western Ave., Chicago 26, Ill. . . or for more information check CP 3868 on handy form, pages 2 and 3.)

One coat penetrates, primes and seals metal surfaces . . .

chromates present resist moisture, temperature changes, chemicals

Uses: To impart rust resisting properties to any type of metallic surface.

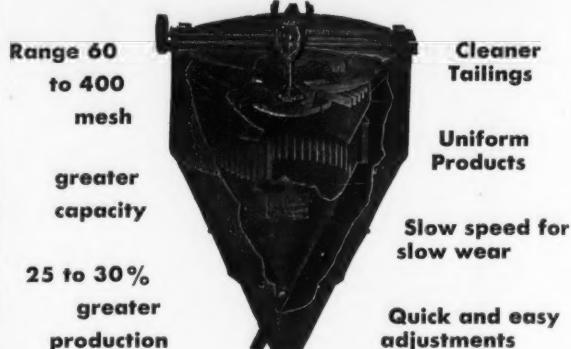
Features: One coat is sufficient to prime, penetrate and seal all metal surfaces. Resists moisture, temperature changes, chemicals, and fumes.

Description: Marketed under the name, Overrust, the coating contains a high quality menhaden vegetable oil base with special chromate pigments added to give extra protection against rust. Paints can be applied by either brush or spray directly over rusted

GAYCO CENTRIFUGAL SEPARATORS

GAYCO Separators, equipped with the adjustable centrifugal sizing fan — an exclusive GAYCO feature — make closer separations. Closer separations bring about higher production through efficient removal of the fines made by the mill. Closer separations bring about higher quality products by eliminating all undesirable oversize.

"TIMKEN BEARING EQUIPPED"
GAYCO brings you all these:



If you have an exceptionally hard separating problem,
TRY THE GAYCO.

Universal Road Machinery Co.

Robert M. Gay-Division
Factory and Laboratory, Kingston, N. Y.
117 LIBERTY STREET NEW YORK 6, N. Y.
Canadian Representative: F. H. Hopkins & Co., Ltd.,
8500 Decarie Blvd., Montreal, Que.
When inquiring check CP 3869 on handy form, pgs. 2-3

... these

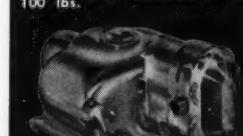
Waukesha
P. D.* Sanitary Pumps

Will Earn Money for YOU... In Savings and
Product Protection



WAUKEEWA
P.D.*
SANITARY
PUMPS

Available in capacities from 20
lbs. to 60,000 lbs. per hour —
against head pressures up to
100 lbs.



WAUKEEWA
SHIFTSPEED
SANITARY
PUMP

Permits capacity changes while
pump is in operation. Just turn the
handwheel, watch the dial
on top of housing.

Write or wire — for advice and details on the Waukesha
P.D. Sanitary Pump to fit your needs exactly.
*P.D. — Positive Displacement — Smooth Flow — Slow Speed

WAUKEEWA
FOUNDRY
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100%
Waukesha
SANITARY
PUMPS
Dependable Product of a Responsible Manufacturer

When inquiring check CP 3870 on handy form, pgs. 2-3

CONSTRUCTION

surfaces without wire brushing or sandblasting.

Product is available in red, gray, green, black, aluminum, and clear.

Where colored anti-rust paints are desired, Overust can be used without the customary colorless primer coat which is required for conventional colored paints. The clear product can be used as a first coat prior to the application of any desired type of other paint (except lacquer).

(Manufactured by Chem Industrial Co., Dept. CP, 3784 Ridge Road, Brooklyn 9, Ohio . . . or for more information check CP 3871 on handy form, pages 2 and 3.)

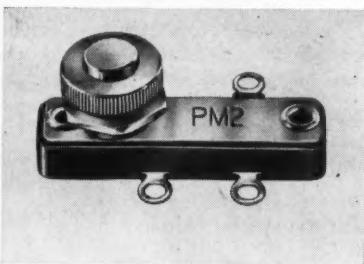
Small switch to mount on panel where space is limited . . .

measures $1\frac{5}{8} \times 7/16 \times \frac{3}{4}$ inches and weighs 17 grams

Uses: Provides snap action switching of single-pole single-throw circuits, either normally open or normally closed, and single-pole double-throw circuits.

Features: Compact design of unit makes it suitable for panel mounting on equipment where available space is limited.

Description: Model PM Tyniswitch measures only $1\frac{5}{8} \times 7/16 \times \frac{3}{4}$ inches and weighs approximately 17



Miniature switch is suitable for panel mounting

grams. Miniature switch has ratings of 15 amperes at 125 v AC and $7\frac{1}{2}$ amperes at 250 v AC. Movement differential is .010 max. Operating force required is 7 to 11 oz and release force is 2 to 3 oz.

(Product of The Sessions Clock Co., Tyniswitch Division, Forestville, Conn. . . or for more information check CP 3872 on handy form, pages 2 and 3.)

For more information on product at right, specify CP 3873 . . . see information request blank between pages 2-3.

12

SIMPSON MIX-MULLER Models

meet every production schedule

... each assuring faster, more accurate MULLING of dry, semi-dry and pasty materials.



No. 00 Mixer 24" pan dia.
1-1/2 hp—1200 rpm
1/4 to 1/2 cu. ft. capacity



No. 0 Mixer 3' pan dia.
5 hp—1200 rpm
1 to 1-1/2 cu. ft. capacity



Laboratory Mixer—18" pan dia.
3/4 hp—1800 rpm
1/10 to 1/5 cu. ft. capacity



Laboratory Mixer—24" pan dia.
1-1/2 hp—1200 rpm
1/4 to 1/2 cu. ft. capacity



Porto-Muller (100% Portable)
3' 3" pan dia.—3 hp—1800 rpm
2-1/2 to 3 cu. ft. capacity



No. 1 Mixer—4' pan dia.
5 and 7-1/2 hp—1800 rpm
3 to 4 cu. ft. capacity



No. 1H Mixer
4' pan dia.—7-1/2 hp—1800 rpm
4 cu. ft. capacity



No. 1-1/2 Mixer—4-1/2' pan dia.
7-1/2 or 10 hp—1200 and 1800 rpm
5 to 6 cu. ft. capacity



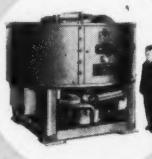
No. 2 Mixer—6' pan dia.
15, 20 or 25 hp—1200 or 1800 rpm
12 to 15 cu. ft. capacity



No. 3 Mixer—8' pan dia.
40 or 50 hp—1800 rpm
25 to 30 cu. ft. capacity



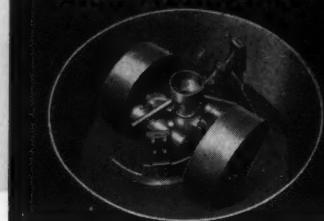
New No. 2F Mixer—6' 8" pan dia.
25 to 30 hp—1800 rpm
30 cu. ft. capacity
(Note adjustable muller design)



New No. 3F Mixer—8' 4" pan dia.
60 to 75 hp—1800 rpm
60 cu. ft. capacity
(Note adjustable muller design)

DO YOU REALLY KNOW WHAT MULLING IS?

WATCH the practiced technique of the chemist's mortar and pestle—the intensive smearing and rubbing action—and basically, THAT'S MULLING!



Simpson Mix-Mullers re-create this action with a special pair of revolving mullers and plows, mounted in a stationary pan. The mullers are supported by rocker arms to assure the correct pressure on the material in preparation, without grinding.

SIMPSON Mix-Mullers are built in 12 basic models to fit practically every mixing requirement. Having a capacity range of from 1/10 to 60 cu. ft., each of these models can be equipped for mixing under pressure or vacuum—for heating or cooling—for mixing corrosive materials—or to function as a reaction vessel as well as a mixer. Each model incorporates the *true mulling principle* that has proved so successful throughout the chemical process, ceramic and food industries—wherever accurate, controlled mixing and blending of materials is a



See MULLING demonstrated . . . BOOTH 233-234
CHICAGO CHEMICAL EXPOSITION . . . September 9-13

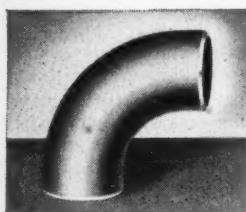
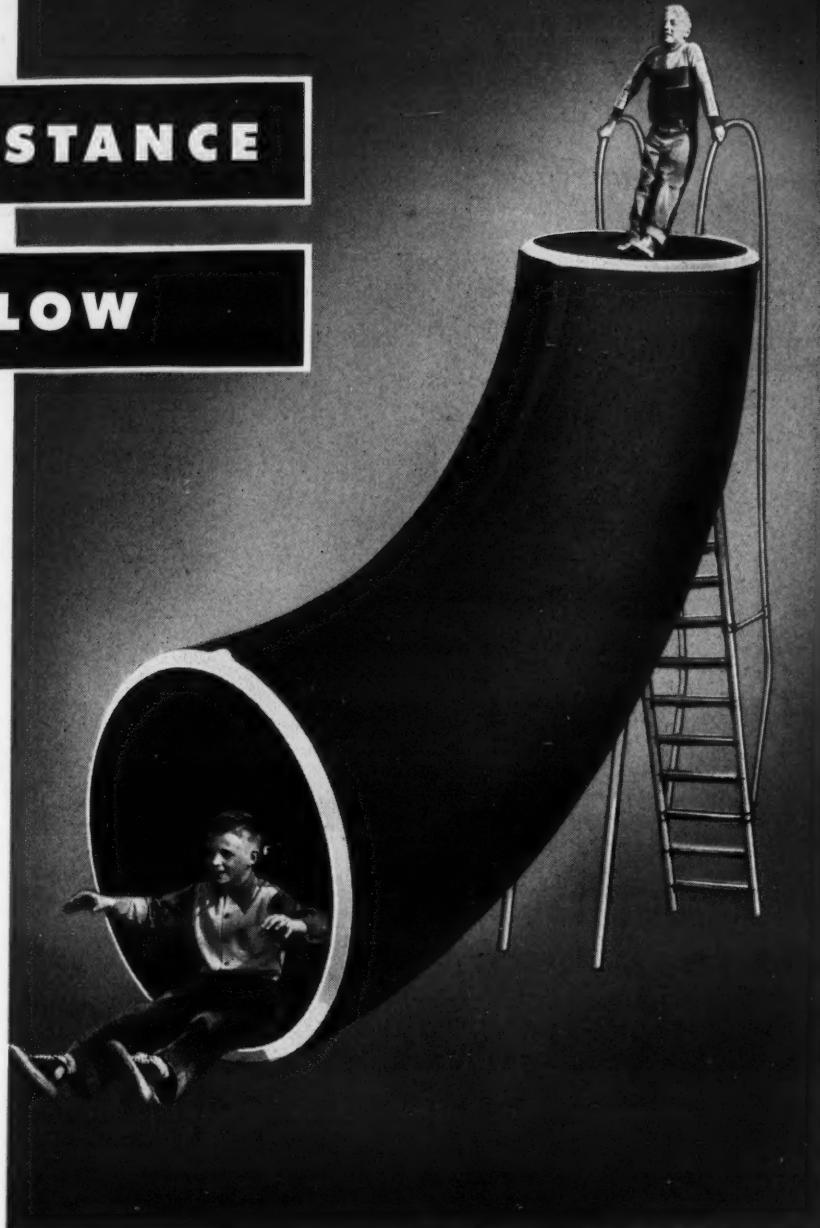
SIMPSON MIX-MULLER[®] DIVISION
NATIONAL ENGINEERING CO., 624 Machinery Hall Bldg., Chicago 6, Ill.



LOW RESISTANCE

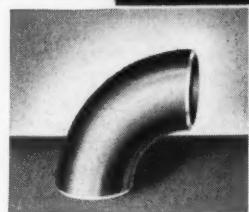
to FLOW

Minimum resistance to flow . . . that is the feature of Midwest Welding Fittings we call to your attention with this photographic fantasy. Other superior qualities that result from our unique manufacturing methods are dimensional accuracy and uniformity . . . true circular cross-section, controlled wall thickness, and accurate radius, included arc and tangents. The consequent benefits are a saving in welding time and a better piping system.



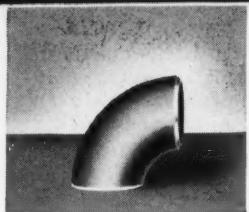
**MIDWEST
"LONG TANGENT"**

Same radius as ASA but tangent equal to 25% of nominal pipe size on each end. Saves pipe, layout and welding time. Costs no more than ASA. Sizes to 24".



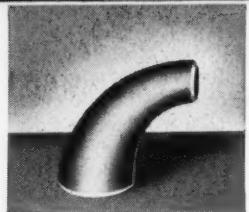
**ASA
STANDARD**

Dimensions conform to applicable size range of American Standard for Butt-Welding Fittings, ASA B16.9. Tolerances much less than allowable. Sizes to 26".



**SHORT
RADIUS**

Recommended where space limitations do not permit use of "Long Tangent" or ASA Elbows. Sizes to 30".



**MIDWEST
REDUCING**

Takes the place of a straight size elbow and a reducer. Eliminates one weld, reduces pressure drop, easier to insulate. Sizes to 12", reductions to half size.

MIDWEST

PIPING & SUPPLY CO., Inc.

STOCKING DISTRIBUTORS IN PRINCIPAL CITIES

Main Office: 1450 South Second Street, St. Louis 4, Mo.

Plants: St. Louis, Passaic, Los Angeles and Boston

Sales Offices: New York 7—50 Church St. • Chicago 3—79 West Monroe St.
Los Angeles 33—520 Anderson St. • Houston 2—1213 Capitol Ave.
Tulsa 3—224 Wright Bldg. • Boston 27—436 First St.

CONSTRUCTION

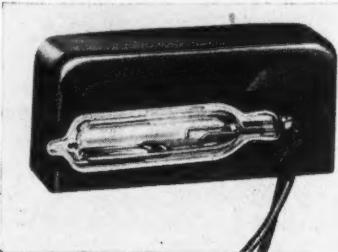
Embed mercury switch in plastic compound for protection . . .

design offers additional means of mounting switch

Uses: For applications that require additional protection against mechanical shock, impact or other mechanical hazards.

Features: Mercury switch is embedded in plastic potting compound for added protection. Rugged design also offers additional means of mounting switches.

Description: Overall size of IMPI mercury switch is 2 1/2 x 3/4 x 1 1/8 inches. Unit provides less than 1



Cutaway view of embedded mercury switch

differential angle, with electrical rating of 2 amp 115 v AC or 1 amp 115 v DC. Contact arrangement of switch is single-pole, normally open. Mounting holes are provided to accommodate 1/4 inch mounting screws and pins.

(Product of Micro Switch, Division of Minneapolis-Honeywell Regulator Co., Dept. CP, Freeport, Ill. . . or for more information check CP 3874 on handy form, pages 2 and 3.)

Self-contained collector for dusts and chips

Descriptive outline covers self-contained dust collectors in four-page bulletin. Photographs show units installed and operating in plants. Equipment is intended for collecting dusts, chips, and shavings in various processing industries. Ratings, specifications, and accessories are briefly summarized. Collector is suction type and single filter bag collects wastes which are then emptied into disposal can.

Bul 635 is issued by Aget-Detroit Co., Dept. CP, Ann Arbor, Mich. When inquiring specify CP 3875 on handy form, pages 2 and 3.

For more information on product at left, specify CP 3876 . . . see information request blank between pages 2-3.

Powerful suction enables cleaner to handle liquids as well as dry materials . . .

lightweight, portable unit is powered by 1 hp motor and has variety of tools for attachment

Uses: As a commercial vacuum cleaner which can be used to suck up both liquids and dry materials.

Features: Compact, durable, lightweight unit has several other features such as: 1) powerful suction produced by 1 hp motor and a series of fans, 2) quiet operation, 3) tools for every common cleaning purpose.

Description: Motor is of universal type, 110-120v, 0-60 cps, mounted on sealed bearings, 220v design avail-



Can even suck up liquids

able also. Filter is enclosed, dust proof, easily removed. Collector tank has 10-gal dust capacity or $1\frac{3}{4}$ bushels and is easily removed. Ratio of water lift in hose is 55" minimum, manufacturer reports. Extra lengths of hose up to 100' can be used without appreciable suction loss. UL approved cord 35' long and plug are provided. Mounted on hard rubber, noiseless swivel casters, unit is 30" high, $15\frac{3}{4}$ " diam, weighs 39 lb, shipping weight of approximately 50 pounds.

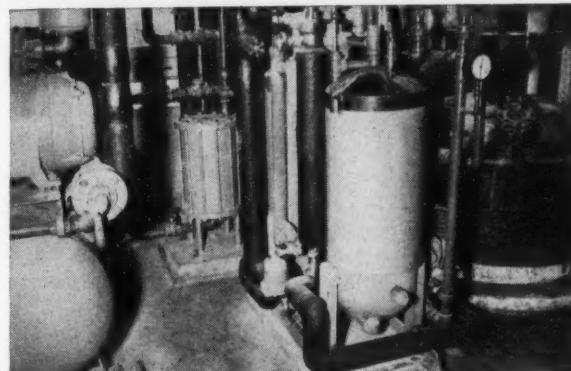
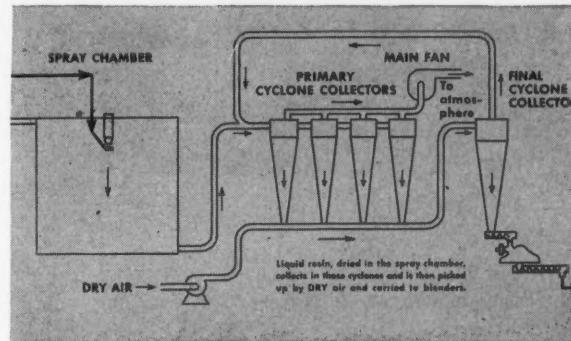
(Development of The Ace Co., Dept. CP, 112 W. Washington St., Ocala, Fla. . . . or for more information check CP 3877 on handy form, pages 2 and 3.)

Calculator determines quantities of enamel required

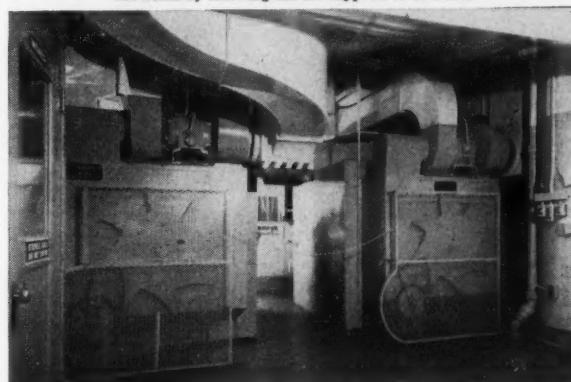
Quantity calculator gives estimates of coal tar base enamel in pounds per thousand feet and gallons per mile estimates on two grades of primer. Instrument will give determinations on amount of compound required for mechanical couplings on pipe on nominal sizes from 2 through 48 inches. Tables of recommended temperatures of application are included on calculator as well as estimates for drying time of primer. Information is provided on quantities of enamel required for hand application to irregular shaped engineering structures.

Reverse side of calculator has Manheim type slide rule for multiplication, division, and similar calculations. Slide rule has C, CF, DF, A, and B scales and it is provided with plastic hairline slide. Calculator is available on letterhead request to Reilly Tar and Chemical Corporation, Dept. CP, 1615 Merchants Bank Bldg., Indianapolis, Ind.

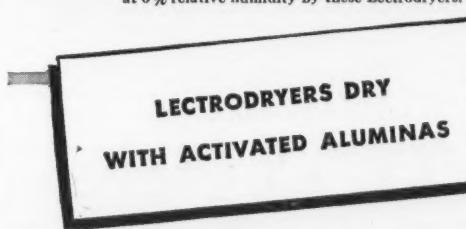
LECTRODRYERS are production tools at these American *Cyanamid* Plants



Two Type BY-1 Lectrodryers help hold sensitive chemical reactions on the beam by DRYing the air supplied to controls.



Aureomycin and penicillin are packed in a sterile area where the air is held at 6% relative humidity by these Lectrodryers.



DRY air picks up powdered resin to keep it DRY at American Cyanamid's Wallingford, Conn. plant

Get molding powders DRY and keep them that way; that's the function of this portion of the production line in this ultramodern plant. There's no moisture in the air that picks up molding powders as they come from the cyclones—no moisture to impair the quality American Cyanamid has compounded into these products.

On instrument air at Calco Chemical Division, Willow Island, W. Va.

No moisture gets into air lines here to condense, form ice, rust or sludge and cause trouble. Two Lectrodryers* designed especially for instrument air work, catch the vaporous moisture which aftercoolers, filters and separators let by. Calco Chemical Division's products are consistently higher in quality, therefore.

Holding humidities constant at Lederle Laboratories Div., Pearl River, New York

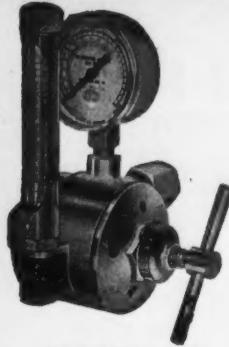
Control the quality of air surrounding processes, just as you control materials going into products; this is a rule for quality production at Lederle Laboratories Division, as at the other divisions of American Cyanamid Company. Besides sterilizing the air here, Lectrodryers hold it at a constant temperature and humidity.

You probably have plenty of places where Lectrodryers will help you boost quality and speed production. For help in finding out, write Pittsburgh Lectrodryer Corporation, 352 32nd Street, Pittsburgh 30, Pennsylvania.

LECTRODRYER

* REGISTERED TRADEMARK U.S. PAT. OFF.

When inquiring check CP 3878 on handy form, pgs. 2-3



For top accuracy and dependability in regulating gases under pressure...

SPECIFY AIRCO REGULATORS

Airco Style 8461—a dual-stage metering regulator which indicates actual flow—ideal for laboratory analysis and industrial processing.

sures in laboratory operations where accurate control and uniformity is a "must".

For these, and all other compressed gas requirements, Airco has the most complete line of dependable regulators available today—for dual or single stage, high or low pressure regulation in cylinders or through manifolds and pipe lines. In design, materials and workmanship, Airco regulators conform to the same high standards which have characterized all Airco products for decades.

For more information about the entire line of Airco pressure regulators, write for Airco Catalog 5. Everyone concerned with regulating gases under pressure will find this booklet invaluable. It gives a quick "reason why" one type of regulator or another will provide desired uniform pressures, at less cost, for a particular job—saving time, needless waste of money. Write now to your nearest Airco office

When inquiring check CP 3879 on handy form, pgs. 2-3

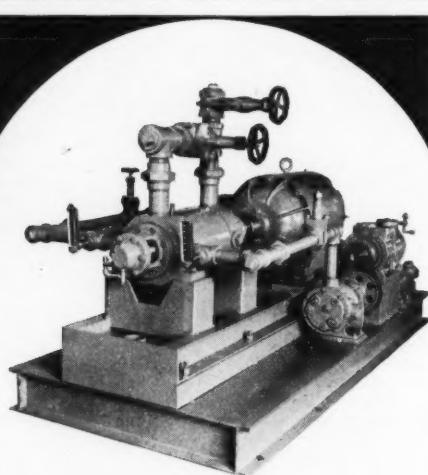
OXYGEN
ACETYLENE
NITROGEN
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ARGON
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NATURAL GAS
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AIR REDUCTION

AIR REDUCTION SALES COMPANY • AIR REDUCTION MAGNOLIA COMPANY
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REPRESENTED INTERNATIONALLY BY AIRCO COMPANY INTERNATIONAL
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Offices in Principal Cities

the Turbinizer for continuous production of complete dispersions or emulsions



It's unique—operates on principle of hydraulic shear—requires no close operating clearances—has no contacting surfaces to wear out.

It's fast—produces thorough dispersions at up to 5000 gals./hr.

It's versatile—handles anything pumpable—liquids, powdered solids or gases—including component materials of widely different viscosities.

It's flexible—can be used for blending, dissolving, dispersing, emulsifying extracting, reacting, scrubbing and homogenizing.

It's adaptable—can be easily piped for controlled recirculation or pre-discharge dilution.

It's compact—unit and auxiliary equipment mounts on single base.

It's precise—can be jacketed for close temperature control and otherwise fully instrumented.

It's simple—no close adjustments need be made or maintained—no special operator training required.

*Write for details.
today*

ASK FOR
BULLETIN
T-52



THE U. S. STONEWARE CO.
PROCESS EQUIPMENT DIVISION
AKRON 9, OHIO

When inquiring check CP 3880 on handy form, pgs. 2-3

Briefs . . .

Nitration-grade benzene and toluene from petroleum

Authors tell about advances in processing techniques which have enabled Shell Oil to produce exceptionally pure products from a source containing only small percentages of the desired end products. Required product specifications are tabulated. Process employed is described, certain corrosion problems commented on. Material balance given which includes: feed, top product and bottom product. Labor, chemical and utility requirements are tabulated. Eight features of process are listed. 5 pages, 10 tables, 4 figures. ("Petroleum Refiner," May 1952, page 104)

Performance of packed liquid-liquid extraction columns

Paper reports the experimental operation of extraction columns with two types of packing. Two different combinations of materials were extracted. Various flow rates and varied speed of agitator were studied as well as extraction with no agitation of liquid. 6 pages, 8 figures, 4 tables. ("Industrial & Engineering Chemistry," February 1952, page 404)

Sensitive mercury-level detecting unit

Describes an electronic instrument developed to determine the differential height of mercury in the two arms of a mercury manometer. Instrument has an accuracy of 0.0005" in differential height and can be used up to a pressure of 35000 psi. Circuit diagram of mercury sensing unit is included. 4 1/2 pages, 7 figures. ("Journal of Research of the National Bureau of Standards," January 1952, page 54)

Oil reclaim system

Author discusses preliminary investigation on characteristics of oil to be reclaimed. This should precede the selection of any reclaiming system. 2 pages, 1 photo, 3 figures, 1 table. ("Plant Engineering," June 1952, pg. 88)

Pressure loss in centrifugal entrainment separators

An experimental study was made in which equipment was under vacuum. Vapors included fatty acids, water, and glycerine. Velocities at 100-200 ft per sec, through lines of from 1 to 20" inlet diameter.

Drawings illustrate three types of centrifugal separators. Flow diagram depicts pilot plant used in the work. Various piping arrangements are illustrated. Data tabulated. 6 pages, 3 tables, 6 figures. ("Chemical Engineering Progress," May 1952, page 241)

Theoretical aspects of catalytic activity of nickel

"Chemisorption of substrates by metals depends upon the residual valencies of the giant-molecule crystallites." These valencies are discussed quantitatively using theory and Pauling's resonating-valence-bond theory. Vacant orbitals appear necessary for rapid general chemisorp-

from contemporary publications

Here's a quick look at interesting articles, appearing in other publications . . . as selected by Technical Editor, H. McCormack

tion and therefore for catalytic activity of certain types as well.

Binding potential of the valencies varies as the Ferric energy of the metal electrons and inversely as the ionization potential of the relevant, substrate valence electrons. These concepts are employed in a rationalization of the properties of nickel and its alloys as catalysts in research and industry. 8 pages, 3 figures. ("Industrial and Engineering Chemistry," May 1952, page 977)

Chemical equipment of cold cast plastic

Article tells about a phenolic plastic with an inert carbon filler which has cold cast into several kinds of chemical plant equipment. Physical properties of the material are tabulated and service tests under corrosive conditions are cited. Reinforced material made has been found to have additional advantages. 2 pages, 5 photos, 1 table. ("Modern Plastics," June 1952, page 88)

An automatic waste (liquid) sampler

Describes an automatic sampler easily built and maintained, which may be installed in a waste liquid line. Quantity of waste varied and it was desired to sample in proportion to the instantaneous rate of flow. Basic principles of design are discussed. 3 pages, 3 figures, 2 tables. ("Water & Sewage Works," April 1952, p. 157)

Pharmaceutical waste (water) treatment

Authors deal with study made on degree of purification which could be accomplished by applying available treatment processes to the manufacturing wastes. Of chief concern were those wastes from penicillin and streptomycin operations. Characteristics of the wastes were determined and laboratory investigations laid basis for plant design. Flow sheet depicts units and their relationship. Operating data are tabulated. 4 pages, 2 figures, 5 tables. ("Water and Sewage Works," May 1952, page 202)

The chemistry of ethylene oxide

Paper is fifth in a series on this subject and deals with the reactions of ethylene oxide with halide ions in neutral and acid solutions. 8 pages, 7 figures, 2 tables. ("Canadian Journal of Chemistry," March 1952, page 169)

Investigation of paper chromatography

Authors examined some factors that affect R_F using amino acids as solutes. Some causes of diffuseness of spots are discussed. Opinion is expressed that these findings should lead to improved methods. 7 pages, 7 figures, 2 tables. ("Analytical Chemistry," April 1952, page 643)

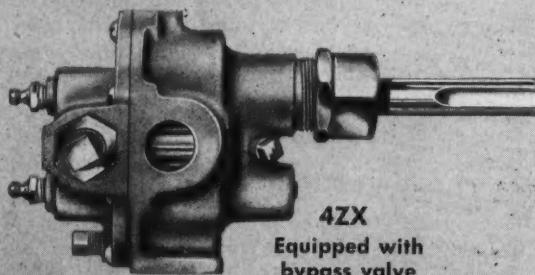
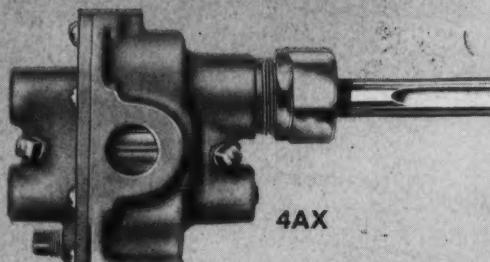
"INSIDE INFORMATION" on the NEW MONARCH CATALOG

NEED A COPY?

Wherever hand or motor powered industrial vehicles are at work there is a need for the valuable facts and figures within this catalog. Just send your name and title on your company's letterhead to The Monarch Rubber Company, 100 Lincoln Park, Hartville, Ohio, and your copy will be on its way.

When inquiring check CP 3881 on handy form, pgs. 2-3

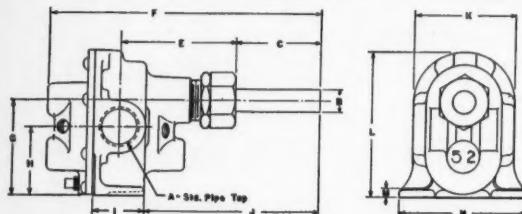
Standard OBERDORFER Series 52
BRONZE ROTARY GEAR PUMPS



**CAPACITY
TABLES**

Gallons per minute —
1,725 R.P.M. — lbs. sq. in.

Pump No.	2 lbs.	20 lbs.	40 lbs.	60 lbs.	80 lbs.	100 lbs.
No. 1½	2.10	1.92	1.75	1.63	1.55	1.50
No. 2	4.10	3.75	3.58	3.42	3.25	3.17
No. 3	7.42	7.08	6.75	6.50	6.33	6.17
No. 4	10.67	10.17	9.67	9.17	8.83	8.50
No. 7	19.75	19.33	19.00	18.67	18.33	18.08
No. 9	23.33	22.92	22.50	22.08	21.67	21.33



DIMENSION TABLE - SERIES 52 PUMPS

Pump No.	A	B	C	E	F	G	H	I	J	K	L	M	N	Ø
1½	½	¾	2 ½	6 ½	22 ½	6 ½	1 ½	11 ½	1 ½	4 ½	11 ½	22 ½	¾	2 ½
2	1 ½	1 ½	2 ½	7 ½	6 ½	2 ½	1 ½	12 ½	1 ½	2 ½	3 ½	3 ½	1 ½	2 ½
3	¾	¾	2 ¼	3 ½	7 ½	2 ½	1 ½	12 ½	1 ½	4 ½	11 ½	22 ½	4	¾
4	1 ½	2 ¼	3 ¼	7 ½	2 ½	1 ½	1 ½	12 ½	4 ½	4 ½	2 ½	2 ½	1 ½	1 ½
7	¾	¾	2 ¼	3 ½	7 ½	2 ½	2 ½	11 ½	12 ½	4 ½	2 ½	3 ½	4	1 ½
9	1	2 ¼	3 ½	7 ½	2 ½	2 ½	1 ½	12 ½	12 ½	4 ½	3 ½	5 ½	4	1 ½

PRICE LIST

Pump No.	No. 1½	No. 2	No. 3	No. 4	No. 7	No. 9
Pipe Size	½"	¼"	¾"	½"	¾"	1"
AX	\$11.25	\$13.25	\$15.50	\$17.00	\$22.50	\$23.75
ZX	15.25	17.50	20.50	22.00	27.75	29.00

See our Catalog in Sweet's File for Product Designers

Industrial Pump Div., Oberdorfer Foundries, Inc.
627 Thompson Rd., Syracuse, N. Y.

When inquiring check CP 3882 on handy form, pgs. 2-3

Page 154

New Literature

**Volume on chemical processes
is well illustrated**

Numerous pictures and charts make second volume on chemical processes readily understandable. Same pattern of information is continued as was laid down by its predecessor two years ago. Twenty-four recently developed plant processes, all now in full scale operation, are presented in its 299 pages. Each article is jointly authored by an editor and one or more members of technical staff of cooperating industrial organization. Each of the articles has appeared previously in "Industrial and Engineering Chemistry."

Among subjects covered are those on fats, phenol, glyoxal, lithium, cane sugar refining, brewing, platinum reforming of gasoline, sulfur, papermaking, and rubber reclaiming. General background of each process is first discussed along with something of its commercial and technical history. Plant installation is then described with assistance of photographs and the actual operations explained. Economics of process are covered, including raw materials and processing cost breakdowns. Conclusion adds information with regard to personnel and future prospects for process.

Volumes I and II are a source of information and reference work of considerable value to anyone interested in any of topics discussed. To obtain "Modern Chemical Processes, Volume II" remit \$5.00 direct to Reinhold Publishing Company, Dept. CP, 330 W. 42nd St., New York, N. Y. When inquiring specify CP 3883 on handy form, pages 2 and 3.

**Lighting fixture hangers
with schematic views**

Eight-page bulletin presents general information on disconnecting and lowering lighting fixture hangers. In addition to descriptive material, bulletin offers schematic illustrations of sloping and flat-roof industrial structures as well as recessed and concealed type mountings. Similar treatment is provided for outdoor installations which are made with unit packages incorporating corrosion-resistant hangers. Discussion covers operation, maintenance, and construction of hangers.

Accessory parts such as shock absorbers, pulleys, and beam clamps are shown in bulletin. Bul TH-52 is issued upon letterhead request to The Thompson Electric Company, Dept. CP, 1111-88 Power Ave., Cleveland 14, Ohio.

**Gravity wheel conveyors
in pictorial review**

Photographs show complete line of gravity wheel conveyors. Descriptive data are presented for units which are available in widths from 12 to 24". Number of wheels per foot will vary from six to 18. General and special applications of these conveyors are illustrated in 24-page bulletin. Concluding pages show turn switches for conveyors. Bul 201 is issued by Harry J. Ferguson Company, Dept. CP, 149 West Ave., Jenkintown, Pa. When inquiring specify CP 3884 on handy form, pages 2 and 3.

**Book presents chemistry as
a fascinating science**

Added interest is achieved in 674-page general chemistry book by weaving chemistry in with history, nature, and familiar subjects. Surprising analogies and unique figures of speech catch and hold reader. This makes the science seem as fascinating as it really is. Illustrations are closely connected with text to explain and clarify it rather than merely to serve as ornamentation. Increased readability and precision have been obtained in this 6th edition of a book first published nearly 30 years ago.

A glimpse of internal structure of atoms and of conversion of matter into energy is permitted very early. This recognizes great general interest in nuclear changes. Also a knowledge of atomic structure is basic to study of chemistry. Mention is made of service rendered by stable and radioactive isotopes. Topics added in this edition include compounds of silicon and fluorine, complexing agents, surface-active agents and enzymes.

To Obtain "General Chemistry, Sixth Edition," by H. G. Deming, remit \$5.75 direct to John Wiley & Sons, Inc., Dept. CP, 440 Fourth Ave., New York 16, N. Y. When inquiring specify CP 3885 on handy form, pages 2 and 3.

**Gas burner nozzles provide
flame retention at tips**

Four-page catalog contains information on gas burner nozzles that retain flame at their tips under usual operating conditions. Part of air-gas mixture is taken from supply and burns in recess around main burner opening. This keeps main flame lighted. Nozzle design permits wide pressure range without blowing flame off tip or backfiring. Flame is long and cylindrical in shape. Combustion is quiet for nozzles of this class.

Units are recommended for blast firing into open ports of furnaces or for firing into open without combustion chamber. They are available in both straight and elbow types in a number of sizes. Catalog 804-C is issued by Hauck Manufacturing Co., Dept. CP, 124-136 Tenth St., Brooklyn 15, N. Y. When inquiring specify CP 3886 on handy form, pages 2 and 3.

**Recommends technical cooperation
with underdeveloped countries**

With direct appeal to business executive and technician, this 96-page book surveys the opportunities offered by economically underdeveloped countries. It analyzes what can be done in underdeveloped areas in terms of concrete industrial planning. Subject is discussed from theoretical and practical aspects. Publication reflects combined efforts of three authors: economist, industrial engineer, and chemical businessman.

After defining the problem of technical assistance as well as conditions and limiting factors in industrial growth, the book reviews methods of industrialization used in the past. Publication offers detailed discussion of Point 4 industrialization and its potentials. Book emphasizes

activities of local governments, national and international organizations. Four Latin American countries and the Colombo plan are examined as case histories in such development. Action by private investors receives extensive treatment.

Book may serve as guide to development opportunities and as warning of dangers which can be encountered. Representative national and international development plans are examined. Book further discusses the need for reforms, organized assistance, and investment guarantees. Final phase of this work points out where and how private companies and technicians can participate in such developments. To obtain "Technical Cooperation With Underdeveloped Countries," remit \$5.00 direct to Chemonomics, Inc., Dept. CP, 400 Madison Avenue, New York 17, New York. When inquiring specify CP 3887 on handy form, pages 2 and 3.

Extracts oil from cottonseed before removal of linters

Process for solvent extraction of oil from cottonseed prior to separation of linters is presented in 80-page pamphlet. Elimination of expensive method of removing linters by gin-saw procedure was attempted in research project described. Researchers found idea technically practical but requiring modification for economical and commercial applications.

Initial investment costs for proposed seed process are estimated to be about \$100,000 more than established method for a plant to handle 150 tons of cottonseed per day. Processing costs are also slightly higher, averaging about 60 cents more per ton. However, all of the oil is subjected to extraction whereas by regular method some of oil is always lost. If more valuable uses can be found for hull-lints solid products, proposed process may become economically practical. It seems likely that first-cut linters will have to be removed by conventional method, however.

Although proposed process is not economical with present information, it does offer a different approach to solvent extraction of cottonseed. With published details of experiments, cottonseed oil industry may develop process to a practical use.

Bulletin No. 125 is issued by Texas Engineering Experiment Station, Dept. CP, College Station, Texas. When inquiring specify CP 3888 on handy form, pages 2 and 3.

Shows operating and assembly features of steam generator

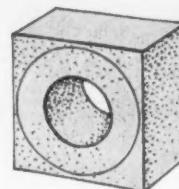
Engineering features of self-contained steam generator are discussed in 28-page bulletin. Descriptive material is supplemented with several illustrations of component parts and cutaway views to provide visual reference. Among features itemized are staggered tubes, four-pass gas travel construction, anti-stress deck, expansile precipitator, induced draft, and horizontal rotary oil burner. Units may be fired by light oil and heavy oil, as well as natural or manufactured gas.

Bulletin shows how components are constructed, assembled to complete the unit, and subsequently tested. Generator sizes range from 20 to 600 hp and pressures up to 250 psi. Separate section of bulletin provides dimensions and fully described list of standard equipment and of accessory equipment.

Bul 2000 is issued by Preferred Utilities Manufacturing Corporation, Dept. CP, 1860 Broadway, New York 23, N. Y. When inquiring specify CP 3889 on handy form, pages 2 and 3.

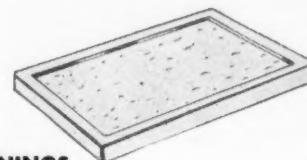
BURNER BLOCKS

Kaocast lasted 3 to 6 times as long as previous refractory. Still going strong.



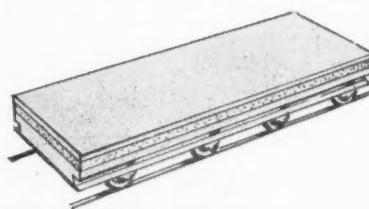
DOOR LININGS

Kaocast lasted 3 to 6 times as long as previous refractory—cut installation cost in half.



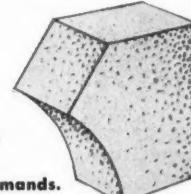
TUNNEL KILN CAR TOPS

Ordinary fireclay crumbled after few trips. Kaocast lasted 30 trips without deterioration.



SPECIAL SHAPES

Kaocast special shapes cast over week-end to meet production demands.



BOILER FURNACE REPAIRS

One power plant keeps a ton of Kaocast on hand for miscellaneous repairs because it is so versatile.

B&W REFRactories PRODUCTS — B&W Allul Firebrick • B&W 80 Firebrick • B&W Junior Firebrick • B&W Insulating Firebrick
B&W Refractory Castables, Plastics and Mortars • OTHER B&W PRODUCTS—Stationary & Marine Boilers and Component Equipment . . . Chemical Recovery Units . . . Seamless & Welded Tubes . . . Pulverizers . . . Fuel Burning Equipment . . . Pressure Vessels . . . Alloy Castings

There's no end to the uses of economical
B&W KAOCAST

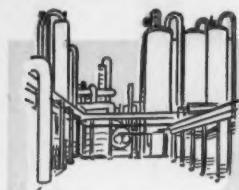


The list of plants who are discovering new, cost-saving uses of versatile B&W Kaocast keeps growing all the time. The reasons? This unique 3000 degree refractory castable can be molded in a hurry . . . cast directly in place . . . applied with a cement gun. It eliminates the need for a large inventory of special shapes. It has high resistance to spalling, low volume change, practically no reheat shrinkage. Want to know more? Ask your B&W Refractories Engineer—or write for Bulletin R-22.

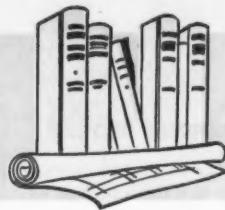


H-45a

When inquiring check CP 3890 on handy form, pgs. 2-3



Processing and Engineering Data

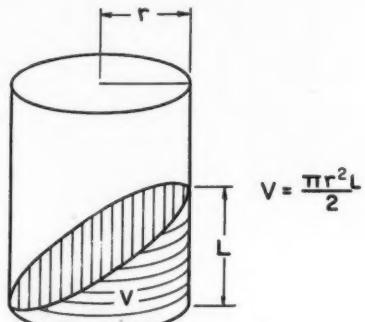


Nomograph for Calculating Volume of Liquid In Tilted Tanks and Drums

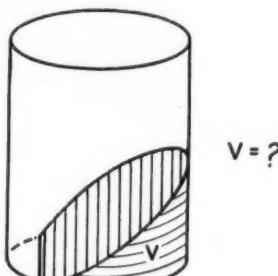
By FREDERICK A. ZENZ

Hydrocarbon Research, Inc., New York, N. Y.

Most mathematics texts and handbooks present the familiar equation for the volume of a truncated right circular cylinder, but no such equation appears to be given anywhere for the case in which the intersecting plane passes through a side and a base.



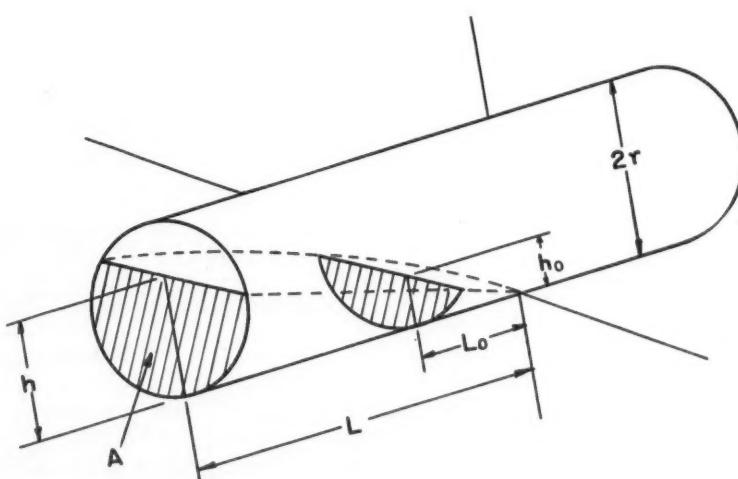
Truncated Right circular cylinder



Plane Intersecting side and base

The formula for the solution of the case presented in Fig 2 may be derived as follows:

(Continued on page 158)



Send for
Latest Bulletin

**BENEFITS
from NEW
HIGH SPEED
MIXER**

Homogeneous Mixing Now is Obtained in Faster Time . . . at Less Cost . . . with the "ENTOLETER" Mixer.

The "ENTOLETER" Mixer is a new-type centrifugal machine designed to provide thorough mixing and blending . . . in faster time . . . at reduced cost. In actual manufacturing operations in the chemical industries, this equipment is producing amazingly uniform mixtures, simply and economically.

Continuous Mixing

The "ENTOLETER" Mixer produces a finished mixture at rates up to 250 pounds per minute. Where ingredient percentages in a formula are sufficiently large to allow accurate metering, a truly continuous operation is achieved.

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The "ENTOLETER" Mixer is easily incorporated in the processing system as a final mixer. It serves to shorten mixing time, with consequent savings and appreciable improvement in product quality.

SEND TODAY FOR YOUR COPY OF THIS NEW, INFORMATIVE BULLETIN — ILLUSTRATING AND DESCRIBING SOME OF THE ADVANTAGES OF HIGH SPEED CENTRIFUGAL MIXING.

ENTOLETER DIVISION
The Safety Car Heating and Lighting Co., Inc.
1185 Dixwell Avenue, New Haven 4, Conn.

NEW LITERATURE

Operation and circuit diagrams of tachometers

Four-page data sheet describes principle of operation of hand, portable and fixed installation tachometers. Literature contains simplified circuit diagrams and photographs of available models. The basic circuit and its advantages are described in detail. Data Sheet T4 is issued by Metron Instrument Company, Dept. CP, 432 Lincoln St., Denver 9, Colo. When inquiring specify CP 3892 on handy form, pages 2 and 3.

Lab study of open boil-off of cotton gray goods

Seven-page bulletin provides quantitative data to show benefits obtained from use of manufacturer's product (Nacconol NR) in conjunction with caustic soda in open boil-off of cotton gray goods. Experimental results are included in four tables, which are discussed at length. It is reported that presence of manufacturer's product reduced both bleach demand and residual wax content in specimens tested.

Bul 311 is issued by National Aniline Division, Allied Chemical and Dye Corporation, Dept. CP, 40 Rector St., New York, N. Y. When inquiring specify CP 3893 on handy form, pages 2 and 3.

Before-and-after photos testify for protective coating

Several photographs of chemical vessels, industrial equipment, and buildings testify to value of Gilsonite base protective coatings. Booklet describes these coatings and lists their properties, uses, and tests to which they have been subjected. Related products such as caulking compounds, primers, and membranizing materials are also described. Coatings are used mainly to prevent corrosion in chemically contaminated atmosphere, to waterproof buildings, and to act as weather barrier over thermal insulation.

Special cork-filled coating is also described in bulletin. It is intended to perform double function of preventing corrosion and providing insulation and is recommended for use in atmospheric temperature range to prevent heat loss or to control condensation. Specifications and coverage of coatings are included in publication. "Insul-Matic in Industry" is issued by Insul-Matic Corporation of America, Dept. CP, 1141 Oliver Bldg., Pittsburgh 22, Pa. When inquiring specify CP 3894 on handy form, pages 2 and 3.

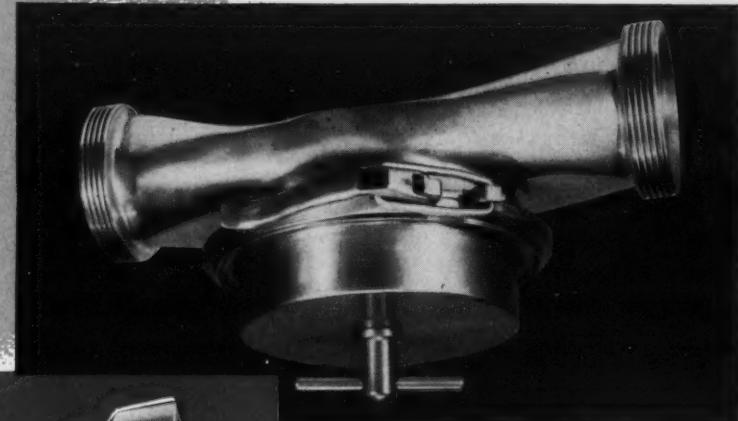
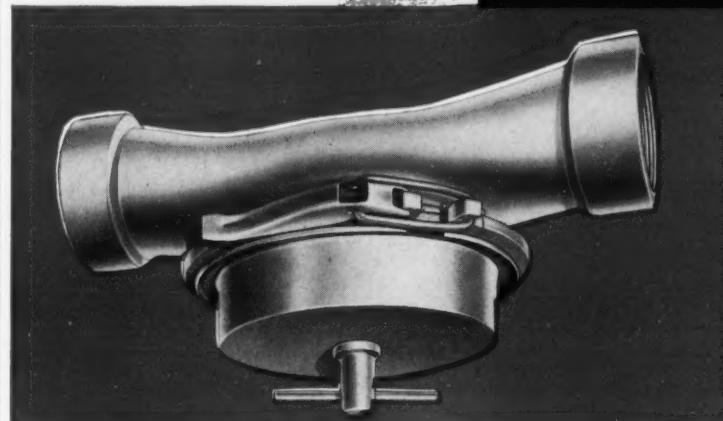
Specifications and features of motor control center

Eight-page bulletin points to features of motor control unit. Controller is intended for service wherever a number of motors are concentrated in small area or where interlocking of controls is required. Units are reported to eliminate the need for distribution panelboards or individually mounted controls. Motor control center is available in NEMA types A, B, and C. Photographs serve to emphasize features of unit when it is installed.

Approximate dimensions and specifications for units are included in bulletin. Bul 400 is issued by Continental Electric Equipment Co., Dept. CP, Box 1055, Cincinnati 1, Ohio. When inquiring specify CP 3895 on handy form, pages 2 and 3.

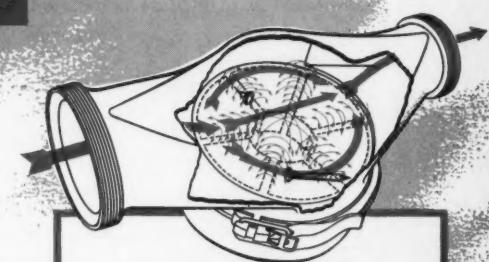
STOP PRODUCT CONTAMINATION

**with
TRI-CLOVER
MAGNETIC
FULL-FLOW
TRAPS**



Above: Tri-Clover ALL-SANITARY Full-Flow Magnetic Trap, with highly polished finish inside and out, and Acme sanitary threaded ends. Available in 2", 3" and 4" O.D. sizes.

Left: Tri-Clover INDUSTRIAL Type Magnetic Full-Flow Trap, with pickled finish. Available with I.P.S. screwed ends, or with Van Stone ends for every application, in 2", 3" and 4" sizes.



Designed for POSITIVE ACTION

The arrows above illustrate how fluid, upon reaching the Tri-Clover Magnetic Trap, flows in a widening stream over the magnetic field. Tramp iron is trapped in a recessed area over the extra-wide magnet area, and is easily removed by simply releasing ring clamp. No need to remove entire magnetic trap from the line.

READY FOR CLEANING IN JUST 2 SECONDS

... It's just this simple. Unsnap ring clamp. Clamp, magnet and gasket are freed and ready to clean. That's all there is to it!



T252

When inquiring check CP 3896 on handy form, pgs. 2-3

Processing and Engineering Data

(Continued from page 156)

All texts and handbooks give the formula for the area of a segment of a circle as:

$$A = (h - r) \sqrt{r^2 - (h - r)^2} + r^2 \sin^{-1} \frac{h - r}{r} + \frac{\pi r^2}{2}$$

The volume may be found by expressing the area in terms of L and h, and integrating between the limits.

$$dV = AdL$$

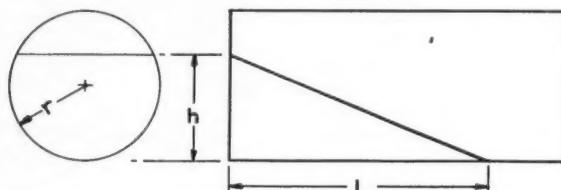
$$h_0 = \frac{L_0}{L} h$$

$$dL_0 = \frac{L}{h} dh_0$$

$$dV = \frac{L}{h} A dh$$

$$\begin{aligned} V &= \frac{L}{h} \int_0^h \left[(h - r) \sqrt{r^2 - (h - r)^2} + r^2 \sin^{-1} \frac{h - r}{r} + \frac{\pi r^2}{2} \right] dh \\ &= \frac{L}{h} \left[-\frac{[r^2(h-r)^2]^{3/2}}{3} + r^3 \left(\frac{h-r}{r} \sin^{-1} \frac{h-r}{r} + \sqrt{1 - \left(\frac{h-r}{r} \right)^2} \right) + \frac{\pi r^2}{2} \right]_0^h \\ &= \frac{r^3 L}{h} \left[\left(\frac{h-r}{r} \right) \sin^{-1} \left(\frac{h-r}{r} \right) + \sqrt{1 - \left(\frac{h-r}{r} \right)^2} + \frac{\pi r^2}{2} \left(\frac{h-r}{r} - 1 \right) - \frac{\left[1 - \left(\frac{h-r}{r} \right)^2 \right]^{3/2}}{3} \right] \end{aligned}$$

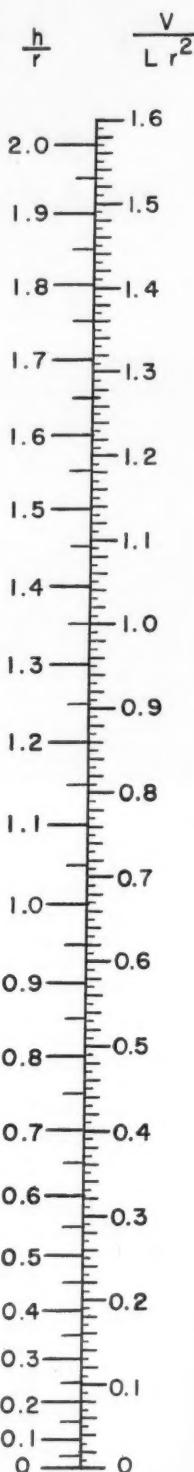
Though rather cumbersome to solve, the equation may be conveniently presented as a one-line nomograph:



Any consistent set of units may be used. If h, L, and r are expressed in inches, V will be in cubic inches; if h, L, and r are expressed in feet, V will be in cubic feet, etc.

Typical Example

The use of the accompanying chart is illustrated as follows: What is the volume of liquid in a tank 4 feet in diameter if h and L are 3 and 5 feet, respectively? Evaluate h/r as 3/2 or 1.5. On the chart opposite h/r = 1.5, read the value of V/L r² as 1.137, from which V = 1.137 L r² = 1.137 (5) (2)² = 22.74 cubic feet.



AGILENE (Polyethylene)

AGILIDE (Unplasticized Polyvinyl Chloride)

Weldable

• Agilene Sheets 36" x 60"
Thicknesses from 1/16" to 1"

• Agilide Sheets 50" x 108"
Thicknesses from 1/16" to 1"

• Agilene Seamless Tubes 4' 0" long
8" to 30" diameter
Wall Thickness 1/8" to 1"

Fabricator franchise still
available in some principal
cities



Pioneers in Plastic Welding
AMERICAN AGILE CORPORATION
Plant and General Offices
5461 DUNHAM RD., MAPLE HEIGHTS, OHIO
Mailing Address, P. O. Box 168 • Bedford, Ohio

When inquiring check CP 3897 on handy form, pgs. 2-3

NEW LITERATURE

Survey of mildewproofing agents includes government specs

Revised and expanded technical service report covers mildewproofing agents with respect to government specifications. Report contains summaries of several government specifications calling for mildewproofing of canvas, cotton, duck, rope, burlap, and similar fiber materials. Methods and products used in mildewproofing are described. Eight per cent copper naphthenate is one of the agents included in this discussion. Index to specifications is provided at end of 27-page report.

Report P-17 A is issued by Witco Chemical Company, Dept. CP, 295 Madison Ave., New York 17, N. Y. When inquiring specify CP 3898 on handy form, pages 2 and 3.

Temperature controller monitors twenty points a minute

Temperatures at twenty different places in system may be read in one minute with single control unit reviewed in 8-page bulletin. If any temperature exceeds pre-set standards of safety, instrument automatically shuts down heating circuit or sets off alarm.

Accurate measurements are provided by jeweled, non-electronic movements. Wiring is simple in sealed, flush-mounted case. Scale can be read from distance of 20 feet. By pushing button, continuous readings can be made of any one position.

Unit consists of pyrometer and motor-driven switch. Switch may be obtained separately to convert present manually operated systems to automatic operation. Other pyrometers and thermocouples, air velocity measurers, and dewpointers are also presented in brochure.

Bulletin No. 4703 is issued by Illinois Testing Laboratories, Inc., Dept. CP, 420 N. LaSalle St., Chicago 10, Ill. When inquiring specify CP 3899 on handy form, pgs. 2-3.

Aluminum paint air-dries in approx 30 min

Performance information on aluminum paint is outlined in four-page bulletin. Complete fusion of paint with metal is said to provide durable protective coating which resists rust and corrosion. Paint air-dries on cold surfaces in approximately 30 min., and withstands temperatures up to 1700°F. Methods of application, chemical content of paint, and area coverage are discussed in report. Bul 112351 is issued by Speco, Inc., Dept. CP, 7308 Associate Ave., Cleveland 9, Ohio. When inquiring specify CP 3900 on handy form, pages 2 and 3.

Nature and effects of graphitization plus corrective measures

Ten year research study of graphitization is reported in 12-page booklet. Detailed description covers nature of graphitization and its effects. Booklet lists preventative and corrective measures. Photomicrographs of metallurgical specimens illustrate graphitization process. Eutectic diagrams and graphs also show effect of temperature, time, and other variables on graphitization. Separate sections cover the effect of chemical composition, deoxidation practice, pre-welding microstructure, welding conditions, stress, and strain.

"Graphitization" is issued by Edward Valves, Inc., Dept. CP, East Chicago, Ind. When inquiring specify CP 3901 on handy form, pages 2 and 3.

ACE PARIAN®
chemical piping

TOUGH • ODORLESS • NON-TOXIC •

PHYSICAL CHARACTERISTICS:

- Specific Gravity — 1.12
- Tensile Strength — 2000 psi
- Resistance to Cold Flow — Excellent
- Deformation Under Load at 122°F — 0.6%
- Impact Strength — Izod 32 ft. lbs./in. notch
- Resistance to Continuous Heat, no load — 212°F
- Low-Load Heat Distortion Temp. — 105-110°F
- Coeff. Thermal Expansion/Deg. F — 9×10^{-5}
- Resistance to Sunlight — Excellent
- Water Absorption — 0.04-0.06%
- Elongation — 100-200%

EXCELLENT:

- Sulfuric Acid, 10-30%
- Calcium Chloride, 15% aq.
- Calcium Hypochlorite
- "Duponol" ME, 10% aq.
- Triethanolamine
- Ferric Sulfate, 15% aq.
- Saturated Salt Water

GOOD:

- Sulfuric Acid, 60% — concentrated
- Hydrochloric Acid, conc. (10-37%)
- Sodium Hydroxide, 10-50%
- Ethyl Alcohol (denatured)
- Acetone
- Formic Acid
- Hydrofluoric Acid, 48%

FAIR:

- Nitric Acid, 10%
- Acetic Acid, 10%
- Ammonium Hydroxide, 10-28%
- Dioxane
- Xylene
- Sodium Bisulfite
- Linseed Oil

POOR:

- Benzene
- Ethylene Dichloride
- Butyraldehyde

UNSUITABLE:

- Nitric Acid (Conc. 70%)
- Acetic Acid, glacial
- Oleic Acid, conc.
- Most Chlorinated solvents
- Lubricating Oil
- Ethyl Acetate

No other chemical piping offers such a remarkable combination of chemical resistance, high impact strength, and easy workability as new ACE Parian. Formed of Polyethylene with all the skill of American Hard Rubber Company's 101 years of specialized experience, it is ideal wherever both the interior and exterior of the pipe are exposed to corrosion. Odorless and non-toxic, it's also good for foods and beverages.

All standard pipe sizes from $\frac{1}{2}$ " to 2". Standard lengths of 10 feet. It's easy to thread with standard dies, and a complete line of molded Ace Parian fittings are available.

Why not glance over the physical characteristics and specific reagents at right, and see how many places in your plant this new pipe can save for you!

Parian is only one of many ACE rubber and plastic products serving the chemical industry. Tanks, pumps, piping, valves, fittings are available in standard or special constructions for complete chemical processing, storage or circulating systems. Ask our engineers to recommend the most economical corrosion-resistant equipment for your processes.

ACE rubber and plastic products

AMERICAN HARD RUBBER COMPANY
93 WORTH STREET • NEW YORK 13, N. Y.

When inquiring check CP 3902 on handy form, pgs. 2-3

JULY, 1952

Page 159

**Ideas first, equipment second
in chemical operations**

Ideas receive first consideration in this 501-page book on chemical operations. Individual equipment is pictured in its true position as a tool rather than an end in itself. This is a refreshing and broad outlook and is to be highly commended.

Many books on unit operations lead students to look upon such an operation as distillation or drying as an objective in itself. The real goal is economical manufacture of a high quality product. These techniques are merely tools and many suitable methods may often be used to equal advantage. Here these various operations are closely correlated toward overall goal. Student is taught to think critically of processes and marshall best means for mastering them.

If reader looks through the six sections of text, he can see how well they fit any general chemical operation. Thinking along lines suggested will help student to make a smooth transition from school to industry. Book is also of value to professional engineers and chemists who need a clearly-defined outline on the field of chemical engineering. Capacity or cost data, nor minute intricacies of design or operation are not presented. These subjects are thought to be adequately covered in several other books available.

To obtain "Chemical Engineering Techniques" remit \$6.00 direct to Reinhold Publishing Corp., Dept. CP, 330 W. 42nd St., New York, N. Y. When inquiring specify CP 3905 on handy form, pages 2 and 3.

**Press for thermosetting plastics
will also handle alkyds**

Four-page bulletin describes 15-ton press designed for molding thermosetting plastics. This includes alkyds, which are processed without press modification. Time cycle for feeding, closing, opening, and ejecting in only 5 sec plus cure time. Wide variety of items such as knobs, appliance parts, tube sockets, and plugs may be formed on press.

Action of main cylinder is applied and multiplied through toggle. Platen area is 10 x 6" with mold cavities in any desired arrangement. Machine is 6' 4" high and occupies floor space of 54 x 22". It weighs 2500 lb. Bulletin No. 513 is issued by F. J. Stokes Machine Company, Dept. CP, 5500 Tabor Road, Philadelphia 20, Pa. When inquiring specify CP 3906 on handy form, pages 2 and 3.

**Lists chemicals available
in 5-gal containers**

Eight-page price list includes 189 organic chemicals offered in 5-gal units. This line bridges gap between chemicals manufactured in smaller quantities by supplier and 55-gal drum lots from other manufacturers.

Each chemical is shown with name of the company that produces it. Manufacturer's specifications and wt per container also appear with the price. List should be interesting and helpful to customers desiring these intermediate quantities of basic chemicals. Mention is made of fine organic chemicals and gases also stocked by supplier. Prompt delivery is assured.

"Commercial Chemicals List #1" is announced by Organic Division, The Matheson Company, Inc., Dept. CP, East Rutherford, N. J. When inquiring specify CP 3907 on handy form, pages 2 and 3.

Plan Your Boiler Installation this Way..



**... to Balance Load Factor with Low Investment
... to Meet Present Needs and Future Expansion ...**

CLEAVER-BROOKS self-contained steam boilers are the answer to both present and future steam needs. You can install Cleaver-Brooks boilers in units to fit your present steam capacity requirements . . . keeping your investment at a minimum and your boiler efficiency at a maximum. Here's how it works . . .

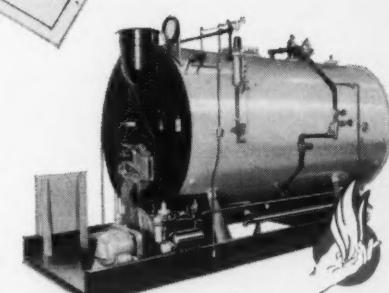
Your initial Cleaver-Brooks boiler installation is made in the size or capacity to fit your present steam load — this assures full use now at top efficiency and low capital investment.

As increased steam needs arise, additional Cleaver-Brooks boilers can be added to keep pace with your expanded requirements.

With this flexible program, you have the greatest return from your boiler investment — minimum original cost and lowest operating cost. Your boilers are always operating at maximum efficiency (80%) over the entire working range (30 to 100%).

Cleaver-Brooks self-contained boilers are ideal for multiple installations because of their compactness, low headroom requirements, fast installation, automatic operation, range of sizes. Available in standard models—15 to 500 hp.; 15 to 250 psi; gas, oil or combination gas and oil fired units.

Get all the story — write today for latest catalog.



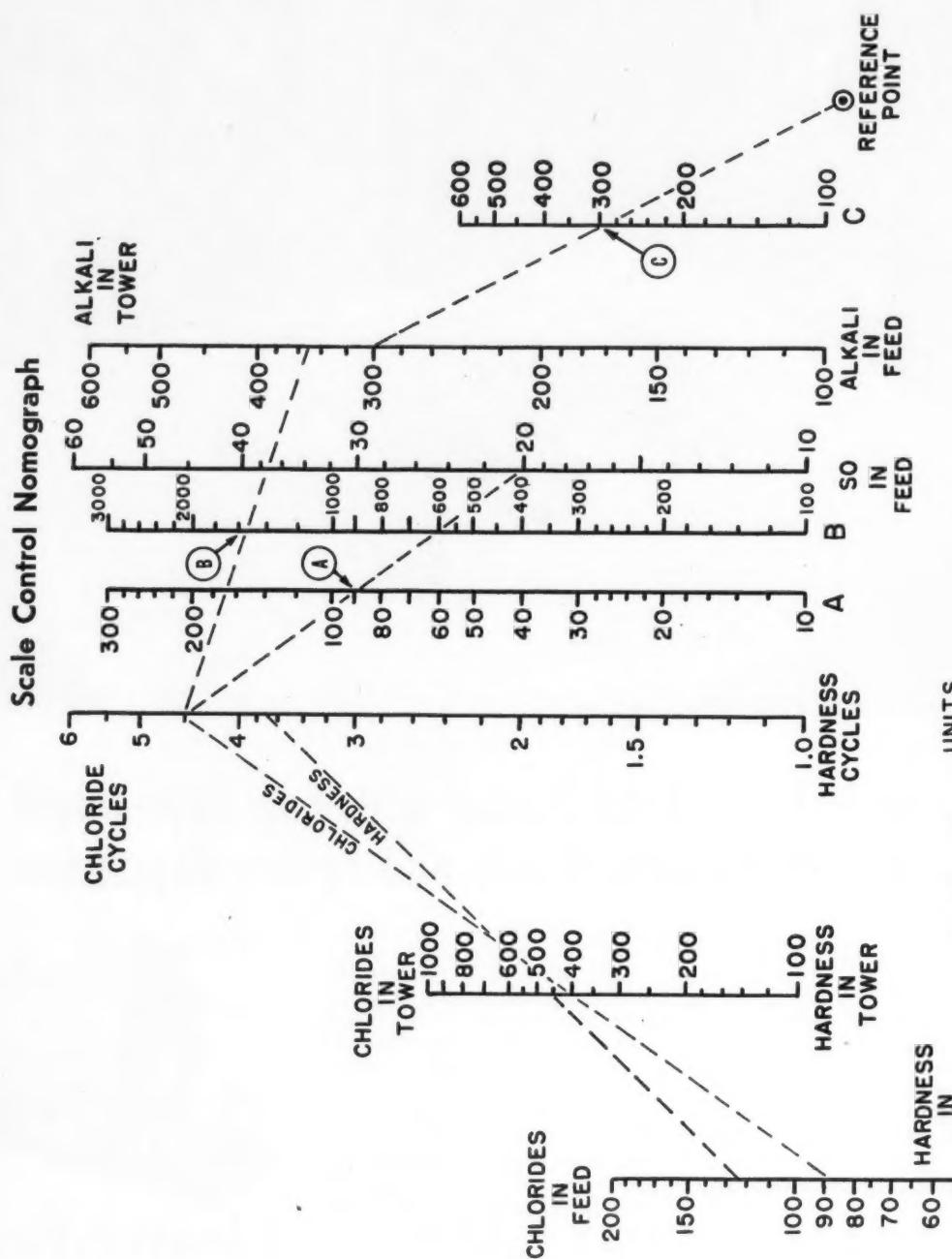
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Dept. H-348 E. Kenef Ave., Milwaukee 12, Wis., U.S.A.
Cable Address: Clebro-Milwaukeewis

Builders of Equipment for the Generation and Utilization of Heat • Steam Boilers • Oil and Bitumen Tank-Car Heaters • Distillation Equipment • Oil and Gas-Fired Conversion Burners



When inquiring check CP 3908 on handy form, pgs. 2-3



DON'T BE HALF-SAFE Obtain COMPLETE ELIMINATION

of Offensive Odors and Visible
Smoke Plume

from your process by the new, low temperature
CATALYTIC COMBUSTION PROCESS

Installations now cleaning up exhaust fumes
from —

Kettle Cooking Wire Enameling
Paint Baking Organic Chemicals
And Similar Manufacturing Operations.

BULLETIN B and other technical articles available
for distribution — SEND NOW for your
copy.

Patents Pending



When inquiring check CP 3909 on handy form, pgs. 2-3



Conveyor trough moves bulk or packaged materials horizontally or up inclines to 10° at speeds up to 70 F.P.M. Natural frequency vibration with power regenerated through coil springs means low input power requirement. Balance frame compensates trough action and eliminates need for a heavy, expensive mounting base. Quiet...dependable...economical.

WRITE FOR BULLETIN 950
Containing full application data

STEPHENS-ADAMSON MFG. CO.
Standard Products Division
11 Ridgeway Ave., Aurora, Ill.
S-A
Please send me Bulletin 950 on S. A.
Vibrating Conveyors.

Name
Company
Address
City Zone State

When inquiring check CP 3910 on handy form, pgs. 2-3

NEW LITERATURE

Conveying and processing equipment review

Catalog of machinery for conveying, processing, and power transmission is shown in 16-page booklet. Each item is illustrated and briefly described. Cutaway photographs view internal operations of conveyor-elevator units. Description also covers equipment such as screw conveyors, belt conveyors, bucket elevators, and oscillating conveyors. Booklet concludes with review of variable speed, fluid, chain, and enclosed gear drives as well as dryers and vibrating screens.

Booklet 2392 is issued by Link-Belt Company, Dept. CP, 307 N. Michigan Ave., Chicago 1, Ill. When inquiring specify CP 3911 on handy form, pages 2 and 3.

Description and highlights of safety relief valve

Four-page bulletin describes safety relief valve which is reported to have highest Btu discharge rate of any similar valve on market. Unit is shown in sectional illustration to point-up design highlights. Table of capacities is included in bulletin, and comparison of relieving capacity of three safety relief valves is shown graphically. Bul 290 is issued by A. W. Cash Valve Mfg. Corp., Dept. CP, 666 E. Wabash Ave., Decatur, Ill. When inquiring specify CP 3912 on handy form, pages 2 and 3.

Photographic review of parts and uses of drill press feed

Sixteen-page publication offers dimensional drawings and other illustrations to describe operation of drill press feed units. Feeds are available with either electrically or manually controlled directional air valves. Electrical safety is assured by transformer which lowers line voltage to 8 v. Unit operates on any air pressure between 15 and 150 psi. Power thrust developed is approximately five to seven times incoming air pressure. Two adjustable screws control feed. One screw regulates speed of return stroke, and other controls speed of advance stroke.

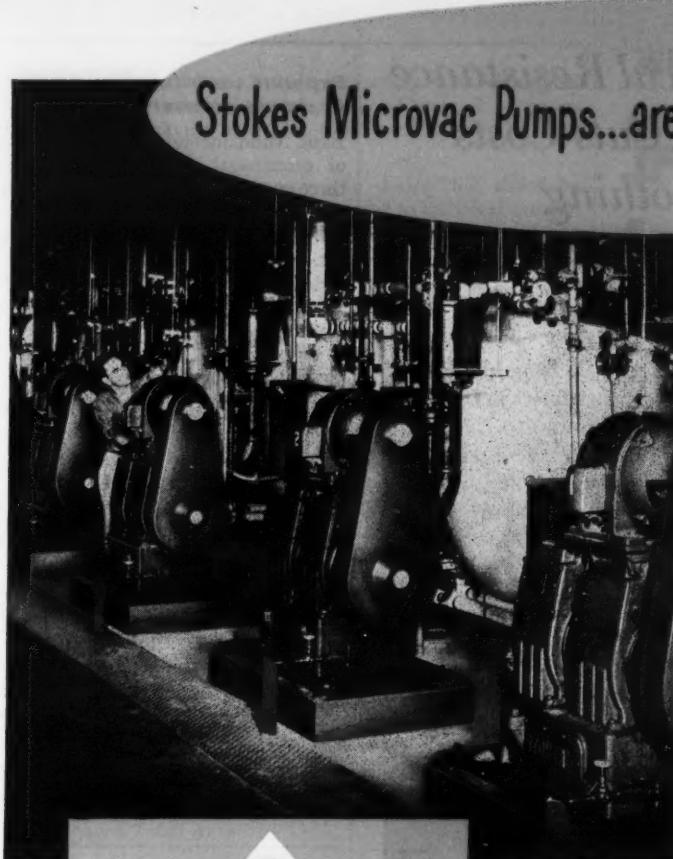
Several installations are shown where introduction of drill press feed has accelerated production. In some cases this increase amounts to 16 times original output. Wiring diagrams show procedure to follow when combining drill press feed with other pneumatic devices. Maximum rotation of pinion shaft ranges from 120 to 540°, and motor stroke rack lengths are 2, 3, 6, and 9". Bul DF-110 is issued by The Bellows Co., Dept. CP, 222 W. Market St., Akron, Ohio. When inquiring specify CP 3913 on handy form, pages 2 and 3.

Properties of low carbon 8 1/2% nickel steel

Twelve-page bulletin describes a ferritic steel that is resistant to embrittling effects of temperatures as low as -320°F. Low carbon 8 1/2% nickel steel can be welded and fabricated under similar conditions as engineering steels. Twenty tables and charts depict mechanical properties and effects of heat treating and welding. In addition to service in petroleum refining and chemical processing fields, this steel may be used to satisfy corrosion-resisting requirements in oil well, machine tool, and pulp or paper industries.

"Some Properties of Low Carbon 8 1/2% Nickel Steel" is issued by The International Nickel Company, Inc., Dept. CP, 67 Wall St., New York 5, N. Y. When inquiring specify CP 3914 on handy form, pages 2 and 3.

Stokes Microvac Pumps...are basic to Vacuum Processing



High volumetric and mechanical efficiency make these famous pumps economical and reliable units in any vacuum system.

Capacities of Stokes Microvac Pumps run from 15 to 500 cfm... pressures to 10 microns absolute. Power consumption is low and the top-mounted motor contributes to compact design requiring minimum floor space.

Lubrication of the four moving parts (including the exhaust valve of corrosion-resistant Teflon) is fully automatic. There are no stuffing-boxes or grease-fittings, and no packing.

Parts are precision-finished, standard and interchangeable. Freedom from wear assures years of trouble-proof service.

Stokes is the only manufacturer of equipment for complete vacuum systems, including Microvac mechanical pumps, oil diffusion pumps, McLeod Gages and Vacuum Valves.

Consult with Stokes on the application of vacuum to drying, freeze-drying, impregnating, extraction, solvent recovery, evaporating, vacuum metallizing, and to other purposes for which vacuum deserves exploration.

STOKES MAKES

Plastics Molding Presses,
Industrial Tabletting
and Powder Metal Presses,
Pharmaceutical Equipment,
Vacuum Processing Equipment,
High Vacuum Pumps and Gages,
Special Machinery

F. J. STOKES MACHINE COMPANY, 5574 Tabor Road, Philadelphia 20, Pa.

When inquiring check CP 3915 on handy form, pgs. 2-3

dynel's Chemical Resistance Increases Wear-Life, Cuts Costs of Industrial Clothing



DYNEL industrial clothing has outworn that of other fibers in the same service by as much as 10 to 1. DYNEL'S inherent chemical resistance... good strength—wet or dry... high abrasion resistance assure extremely long laundry life.



In jackets, trousers, lab aprons and sox, DYNEL offers increased use economy. They may be cleaned or decontaminated in acids without harm.

ACTION OF SOME CHEMICALS ON DYNEL (24 hour immersion)

Acids	Conc.	Temp.	Appearance	Loss in Strength	
Sulfuric	70%	50° C	No effect	8.8%	3.4%
Hydrochloric	38%	50° C	No effect	None	None
Hydrofluoric	50%	Room	No effect	3.4%	2.0%
Nitric	40%	50° C	No effect	None	None
Bases					
Sodium Hydroxide	50%	50° C	No effect	4.5%	6.6%
Ammonium Hydroxide	28%	Room	No effect	None	None
Oxidizing Agents					
Hydrogen Peroxide	30%	Room	Slight bleaching	None	None
Sodium Hypochlorite	Commercial	50° C	No effect	None	None
Solvents					
Ethyl Alcohol	100%	50° C	No effect	None	None
Perchloroethylene	100%	50° C	No effect	None	None
Deodorized Kerosene	100%	50° C	No effect	None	None
Toluene	100%	50° C	Slight bleaching	3.4%	4.4%

Performance Will Tell It's DYNEL

- Unaffected by most chemicals
- Will not support combustion
- Washable—won't shrink or stretch
- Strong—wet or dry

Textile Fibers Dept.
Carbide and Carbon Chemicals Company
A Division of Union Carbide and Carbon Corp. UCC
30 East 42nd Street, New York 17, New York

Please send me:
 The DYNEL Chemical Resistance Folder
 A list of manufacturers of DYNEL industrial clothing

Name.....

Company.....

Address.....

City..... Zone..... State.....

NEW LITERATURE

Explains centrifugal pumps in simple manner

Basic fundamentals of theory, design, and maintenance of centrifugal pumps are outlined simply and clearly in three pamphlets of 20-30 pages each. Since booklets represent corresponding sets of slides, each has 3 or 4 pictures on a page with explanations. Presentation is from an educational viewpoint without reference to pumps of any individual manufacturer. Although more complex theory is avoided, people connected with many aspects of centrifugal pumps will find this information of interest.

Pamphlet on theory is called "How and Why of Centrifugal Pumps." Pump is first compared to a wagon wheel with impeller taking place of spokes. In same straightforward way, capacity, head, and efficiency are discussed in these pamphlets.

Proper placement with respect to supply and outlet is mentioned. Gradually, reader is led into more difficult subject of performance curves and design of pump for material to be handled.

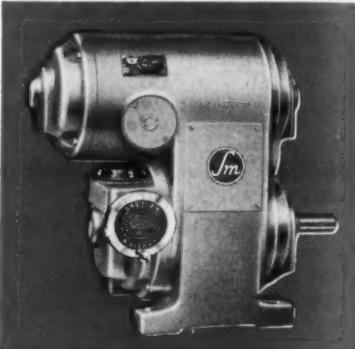
Second booklet, "Covering All Angles," describes method of choosing a pump for a particular job. It shows how a field man meets problem of recommending a pump for a customer. First he should consider size, then type, and last, the best buy. Piping system must be carefully checked in calculating size. Long lines of small diameter with many bends can cause excessive friction losses.

Third pamphlet, entitled "Pump Maintenance," is one of interest to many. Although factors covered are well

Proportioning With Speed-Trol Boosts Output 25%

Simpler, more accurate regulation of acid-seed proportion in delinting cotton seed accomplished with Speed-Trol variable speed drive increased production 25%, improved quality and reduced costs, reports Joseph J. Day, California Acid Delinting Co., Visalia, California. With our processed cotton seed, growers require 65% less seed per acre and also eliminate chopping.

STERLING SPEED-TROL



GIVES YOU VARIABLE SPEED CONTROL NECESSARY FOR:

Equipment adaptation to: Sequence synchronization—operators' abilities—load variations due to differences in quantity, quality, weight, size, tension, hardness or shape of material to be processed, machined, conveyed, blended, mixed, etc.

Process control of: Temperature—viscosity—level—pressure—flow—etc.

Time control of: Baking—drying—heating—cooking—pasteurizing—soaking—chemical action—etc.

With Speed-Trol you get the maximum in production, plant efficiency, quality & profit.

70 ILLUSTRATIONS showing how Sterling Electric Power Drives reduce production costs. Write for Bulletin No. A 121

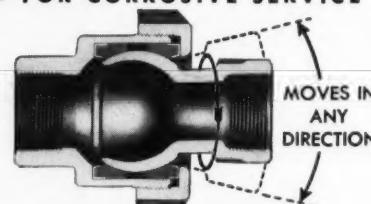
STERLING ELECTRIC MOTORS

Plants: New York City 51; Van Wert, Ohio; Los Angeles 22; Hamilton, Canada; Santiago, Chile
Offices and distributors in all principal cities

Send for New Bulletin No. 215

Flexible BALL JOINTS FOR CORROSIVE SERVICE

—when you need movable joints in piping handling



CHEMICALS

- Provides for movement in piping—up to 40° side flexibility, plus 360° rotating movement.
- Stainless steel and chemically inert gaskets for strong chemicals. No metal-to-metal contact. Choice of body materials.
- One Barco Ball Joint does the work of two or more ordinary swivel joints because "it moves in any direction!"
- Many models available. For pressures to 7,500 psi; temperatures to 1000°F. 15 different sizes, 1/4" to 12". Ask for recommendations. BARCO MFG. CO., 1837 H Winnemac Ave., Chicago 40, Ill.

THE ONLY TRULY COMPLETE LINE OF FLEXIBLE BALL, SWIVEL, SWING AND REVOLVING JOINTS

When inquiring check CP 3917 on handy form, pgs. 2-3

When inquiring check CP 3916 on handy form, pgs. 2-3

Use ARCOS Stainless Electrodes

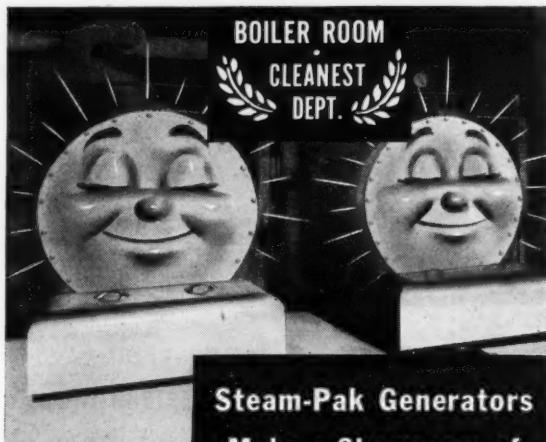
When you put Arcos Chromend or Stainlend Stainless Electrodes to work on a critical welding job, you want to be sure of consistent, dependable results. That's why every Arcos Stainless Electrode is tested and retested throughout its manufacture.

ARCOS CORPORATION
1500 S. 50th St., Phila. 43, Pa.



Stainless, Low Hydrogen and Non-Ferrous Electrodes

When inquiring check CP 3919 on handy form, pgs. 2-3



Steam-Pak Generators Make a Showroom of Your Boiler Room

Cleanliness in the boiler room indicates efficient operation—a major feature of Steam-Pak Generators.

In processing plants where sanitation and cleanliness are all important, the same cleanliness can be achieved in the boiler room with the installation of York-Shipley Steam-Pak Generators. These Steam-Paks operate automatically around-the-clock, furnishing steam or hot water as required at the lowest cost possible. Available in complete range of sizes from 15 to 300 h.p. for high or low pressure steam or hot water. Fired with oil and/or gas.

Steam in a Package—This factual book sent FREE on request.
Bulletin 102-H

YORK-SHIPLEY, INC.
Industrial Division, York, PA.
Automatic Heat and Power Specialists since 1918

When inquiring check CP 3920 on handy form, pgs. 2-3

NEW LITERATURE

known by "old timers," such points as not running a pump dry are overlooked every day. Hence, it serves as a worthwhile review even for those well acquainted with pump maintenance.

After reading literature some may desire that slides be shown to plant maintenance foremen or to technical groups. Manufacturer publishing booklet has representatives who will show slides upon request.

Pamphlets are issued by Allis-Chalmers Mfg. Co., Dept. CP, Milwaukee 1, Wisconsin. When inquiring specify CP 3921 on handy form, pages 2 and 3.

System to keep indexes visible in record file

Equipment which can be used to maintain reference indexes and records is described in 12-page folder. Visible index consists of die cut cards which button into runways in a manner that brings their upper indexing edges into a fixed position. This arrangement maintains uniform visibility of indexed records. Runways may be attached to frames, Kardex slides, books, panels or folders. Frames can be hung on rotary holders, desk stands, and wall brackets.

Discussion also covers steel trays and stands that can be moved to various locations. Booklet concludes with description of cards and signals which flash needed information on unusual conditions. Bul KD 608 is issued by Remington Rand Inc., Dept. CP, 315 Fourth Ave., New York 10, N. Y. When inquiring specify CP 3922 on handy form, pages 2 and 3.

Lists chemical resistance of rubber lining

Corrosion-resistant properties of saran rubber are reviewed in relation to its application as tank lining. Introduction to 4-page bulletin surveys physical properties of material and continues with comprehensive listing of resistance of rubber lining to chemicals and solvents. Rubber lining is said to have been successful in such applications as storage tanks, tank trailers, processing tanks, and production towers. "Saran Rubber" is issued by Saran Lined Pipe Company, Dept. CP, 2415 Burdette Ave., Ferndale 20, Mich. When inquiring specify CP 3923 on handy form, pages 2 and 3.

Reports protective coating re-seals when outer surface is broken

Introduction to 20-page booklet specifies that protective coating is not a paint, but heavy coating which can be applied many times thicker than paint. This is said to yield a longer term of protection than paint. Because coating stays elastic beneath outer surface, booklet claims that cracks are bridged and filled. Coating has sufficient "give" to allow for expansion and contraction. Material is reported to re-seal itself when outer surface is broken, since the pliable under-surface hardens on contact with air.

Large portion of booklet is devoted to illustrations of different types of masonry structures, which coating protects from wind, weather, fumes, and heat. Several "before-and-after" photographs graphically demonstrate material's possibilities in masonry restoration. Booklet concludes with description of application methods. "Dum-Dum Masonoc" is issued by The Arco Company, Dept. CP, 7301 Bessemer Ave., Cleveland 27, Ohio. When inquiring specify CP 3924 on handy form, pages 2 and 3.

WHY SKILLED WORKMEN Prefer



Small Ratchet Threaders

RIDGID TOOLS
make good workers
Better!



Drop head sets to thread $\frac{1}{8}$ " to 2"

Extra Fast Easy Pipe Threading



★ Heads snap into
ratchet ring from
either side, won't fall out.

★ Precision-cut alloy dies reverse for close-to-
wall threads—no special dies needed.

★ 00R & 0R, $\frac{1}{8}$ " to 1"; 111R and 11R, $\frac{1}{8}$ " to
 $\frac{1}{4}$ "; 12R, $\frac{1}{8}$ " to 2". Conduit dies available.

★ Buy at your Supply House.

THE RIDGE TOOL COMPANY • ELYRIA, OHIO



When inquiring check CP 3925 on handy form, pgs. 2-3



**NAGLE
PUMPS**



NAGLE PUMPS, INC.

1247 CENTER AVENUE, CHICAGO HEIGHTS, ILLINOIS

PUMPS FOR ABRASIVE AND CORROSIVE APPLICATIONS

When inquiring check CP 3926 on handy form, pgs. 2-3

NEW LITERATURE

Explains design of sugar cube press

Redesigned press for molding sugar into cubes is described in detail in 8-page bulletin. It tells of process for sugar cube manufacture. Information is also given on complete plants for cube sugar.

Principal part of press is a cylinder with a number of cubical shaped pockets. Bottoms of pockets are composed of movable plungers which travel inward and outward for pressing the sugar. Sugar is first mixed with syrup, then pressed, and conveyed to oven for drying.

Presses are available for making sugar into different forms other than cubes and in many sizes. Complete plants include mixer, press, conveyer, oven, and overhead railway. Capacity of such a set-up is 6000 to 110,000 cubes per 24 hours.

"Pressed Sugar" is issued by Standard Steel Corp., Dept. CP, 5083 S. Boyle Ave., Los Angeles 58, Calif. When inquiring specify CP 3928 on handy form, pages 2 and 3.

Folder indicates value of moisture tester

Four-page folder lists features of portable moisture tester. Moisture percentage is taken from dial and built-in thermometer gives temperature of sample. Instrument is illustrated in pamphlet and operational procedure is described. Unit is equipped with self-powered ohmmeter which generates its current.

"Universal Moisture Tester" is issued by Burrows Equipment Company, Dept. CP, 1316 Sherman Ave., Evanston, Ill. When inquiring specify CP 3929 on handy form, pages 2 and 3.

Processing alumina to aluminum

Sixteen-page booklet describes plant facilities and the process of reducing alumina to aluminum pig. Pictorial sequence of process starts with views of rectifier station and continues with illustrations of conveyor system for carbon blocks, the insertion of anode stubs in these blocks, and pouring the molten metal.

Sectional view is presented of steel shelled electrolytic cells known as pots. "Welcome to Troutdale" is issued by Reynolds Metals Company, Dept. CP, 2500 S. Third St., Louisville 1, Ky. When inquiring specify CP 3930 on handy form, pages 2 & 3.

Q.

What vacuum-producing equipment has no moving parts?

A.



11 Broadway,
New York 4, N. Y.

The I-R STEAM-JET EJECTOR

Steam nozzle, suction chamber, and diffuser. These are the three basic parts of an I-R Steam-Jet Ejector. They're all stationary, all ruggedly constructed, accurately aligned and rigidly bolted together.

Steam shooting into the venturi-shaped diffuser creates the required suction pressure. There's nothing to wear out—nothing to adjust, lubricate or maintain. Operation is quiet—vibrationless—foolproof.

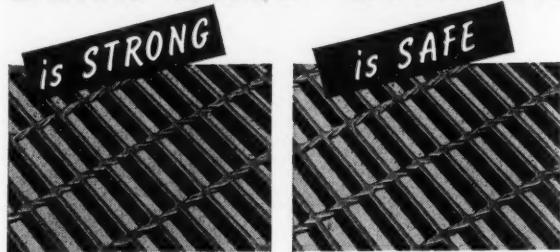
I-R Steam-Jet Ejectors can be supplied for producing vacuum pressures down to .002" Hg absolute—in any desired capacity, for handling any combination of air, gases and vapors. If you need vacuum equipment, it will pay you to look into I-R Steam-Jet Ejectors. Send for free Bulletin No. 9013A.

685-4

Ingersoll-Rand

When inquiring check CP 3931 on handy form, pgs. 2-3

BLAW-KNOX GRATING



Electroforged into rigid, one-piece panels.

Twisted cross bar prevents slipping.

...GIVES
BETTER
SERVICE
ON
5 COUNTS

1 SAFER FOOTING
2 GREATER STRENGTH
3 LONGER LIFE
4 LOWER MAINTENANCE
5 MORE OPEN SPACE

Bring your open steel flooring problems to Blaw-Knox for expert help. Bulletin 2365 sent on request.

BLAW-KNOX DIVISION of Blaw-Knox Company
2076 Farmers Bank Bldg., Pittsburgh 22, Pa.

BLAW-KNOX *Electroforged* **STEEL GRATING**

When inquiring check CP 3932 on handy form, pgs. 2-3

CHEMICAL PROCESSING

NEW LITERATURE

Pyrometric cones yield visual guide from 585 to 2015°C

Fiber-bound booklet describes pyrometric cones used in determining finishing point of all types of kiln-fired ceramic products. Cones may also be used to indicate rate of heating in kiln at one or more points, and check heat distribution at these points. Series consists of 61 cones designed to produce graduated scale of deformation points approximately 36°F apart. Cones may be observed in place during firing and have range of 585 to 2015°C. They are available in four groups dependent upon materials and temperature range.

Booklet offers sectional illustration with dimensions of standard pyrometric cone. Since cone deformation points vary with atmosphere and heating rate, these variations are tabulated in back of book. Other data included in 56-page book relate to thermal expansion and stability relations of silica minerals. Booklet "Properties and Uses of Pyrometric Cones" is issued by Edward Orton Jr. Ceramic Foundation, Dept. CP, 1445 Summit St., Columbus 1, Ohio. When inquiring specify CP 3933 on handy form, pages 2 and 3.

Catalog of instruments to record or control variables

Installation pictures of instruments in laboratory and plant serve to pin-point uses of recorders and controllers. Publication surveys instruments for recording or control of temperature, speed, power, pH, daylight illumination, electrolytic conductivity, and weight or other mechanical loads. Listings in 48-page catalog also include several recorder instruments for specialized applications. Cat. ND46(1) is issued by Leeds & Northrup Company, Dept. CP, 4934 Stenton Ave., Philadelphia 44, Pa. When inquiring specify CP 3934 on handy form, pages 2 and 3.

Specifications of electric counting and printing instruments

Four-page bulletin describes instruments which incorporate basic counting and printing circuits. Units may be used in counting and automatically recording electrical pulses, revolutions of rotating equipment, and in measuring elapsed time intervals. Three types of instruments are illustrated. Bulletin includes mimeographed supplement which lists specifications and code numbers of the instruments. This nine-page data sheet presents information on print control, component assembly, housings, current requirements and similar data.

"Printing Instruments" is issued by Streeter-Amet Company, Dept. CP, 4101 N. Ravenswood Ave., Chicago 13, Ill. When inquiring specify CP 3935 on handy form, pages 2 and 3.

Bulletin describes portable and exhaust fans

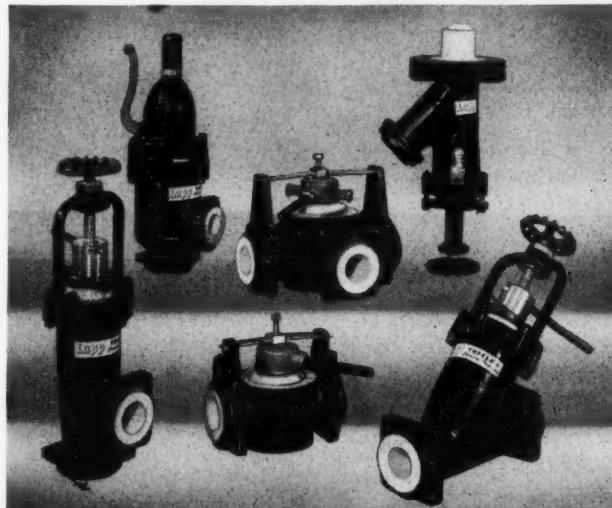
Five types of 30 to 48" portable fans and twenty models of 27 to 72" exhaust fans are described and illustrated in four-page bulletin. Fans are applicable to general cooling and ventilating purposes where large volumes of air are to be moved. Exhaust fans use direct connected motors which range from $\frac{1}{4}$ to 50 hp. They have capacities from 6250 to 140,000 cfm free air. Capacities against $\frac{1}{8}$ to 2" static pressures are rated for exhaust models. Bul 100 is issued by The Manufacturers Equipment Co., Dept. CP, 282 Madeira Ave., Dayton 4, Ohio. When inquiring specify CP 3936 on handy form, pages 2 and 3.

Minor Fire or Explosion?

**YOUR
LINES**

are SAFE with

Lapp TUFCLAD



Y-Valves and Angle Valves (in sizes to 6"), safety valves, flush valves, plug cocks, are available in Lapp solid porcelain with TUFCLAD armor. Also pipe and fittings (to 8") and a variety of special shapes.

**SOLID CHEMICAL PORCELAIN
ARMORED WITH FIBERGLASS-
REINFORCED PLASTIC**

Now there's mechanical security to go with the chemical purity and corrosion-resistance of solid Lapp Chemical Porcelain. TUFCLAD armor is the answer—multiple layers of strong Fiberglass fabric impregnated and bonded to the body with an Epoxide resin of high strength and chemical resistance. It serves as an insulator against thermal shock—a cushion to accidental impact. And it is itself tough and strong, able to hold operating pressures against gross leakage even if porcelain is cracked or broken. Provide this protection to your personnel, equipment and product.

WRITE for description and specifications.

Lapp Insulator Co., Inc., Process Equipment Division, 525 Maple St., Le Roy, N. Y.

Lapp

PROCESS EQUIPMENT

CHEMICAL PORCELAIN VALVES • PIPE • RASCHIG RINGS

PULSAFEEDER CHEMICAL PROPORTIONING PUMPS

When inquiring check CP 3937 on handy form, pgs. 2-3

CONFIRMING SLY AS PIONEERS and LEADERS IN INDUSTRIAL DUST CONTROL

one of our men from the
Cleveland office visited 9
nearby installations and
here is what he found:

1. In a Cement Plant—This Sly filter is responsible for saving approximately \$100, or 50 barrels of cement, per 24-hour day.

2. In a Refractory Plant—Two Sly filters are salvaging refractories fines, which are returned to the mixing of their product, at the rate of 3300 lbs. per day at a value of \$10.00 per ton.

3. In a Steel Mill—The filter is performing very satisfactorily and user is surprised that the bags do not need replacement since hot mill scale is very abrasive.

4. In a Stamping Plant—The Sly units are doing a very effective job of dust suppression throughout the plant. They have operated 4½ years without repairs or bag replacement.

5. In a Soy Bean Mill—The company takes pride in the cleanliness of the plant and enjoys the savings from the recovery of 5½ tons of meal at a value of \$74.00 per ton, or \$407, per day.

6. In a Foundry—Since the installation of these filters the company has not replaced any bags, including the first unit, which is still going strong after 13 years. The maintenance has been nil, and the performance very satisfactory.

7. In a Processing Plant—Well pleased, and maintenance nil. Dust collection produces better looking products.

8. In a Rubber Plant—Sly filter collects mica from covering machine and zinc stearate from dusting, which are constantly re-used. Very satisfactory service and up to date no repairs.

9. In a Soap Factory—Filter is doing a splendid job of collection, and soap fines are returned to product. Has operated for a period of 4½ years without bag replacement or repairs.

By 100% dust collection and economical operation, Sly Dust Filters soon repay their cost. They collect practically all kinds of industrial dusts.

We are both losing money as long as you don't use Sly.

Tell us your dust problem, we'll tell you what can be done and send you helpful Bulletin 98 on dust collection.

THE W. W. SLY MANUFACTURING CO.

4754 TRAIN AVENUE • CLEVELAND 2, OHIO

BRANCHES IN: New York • Chicago • Philadelphia • Syracuse
Detroit • Buffalo • Cincinnati • St. Louis • Minneapolis • Birmingham
Los Angeles • Toronto

When inquiring check CP 3938 on handy form, pgs. 2-3

NEW LITERATURE

Comparative illustrations show features of roofing material

Four-page bulletin offers pictorial review of waterproofing and protective qualities in roofing materials. Two-color bulletin specifies that asphalt material is chosen for maximum resistance to decomposition and permanent flexibility under all climatic conditions. Illustrations show cracking or "alligatoring" of asphalt when less carefully selected raw materials are used. Contrasting photographs show results of fast drying materials as opposed to slow drying and penetrating oils.

Roof coating is flexible, according to bulletin, and will not sag under excessive heat or crack at low temperatures. Materials are offered in semi-liquid and plastic forms. Folder also includes covering capacities of roofing material on basis of quantity per 100 sq ft. "Roof Protection" is issued by The Hallemite Manufacturing Co., Dept. CP, 2446 W. 25th St., Cleveland 13, Ohio. When inquiring specify CP 3939 on handy form, pages 2 and 3.

Gives list of industrial chemicals to which lining is resistant

Application of flexible Koroseal lining to plating tanks, racks, and vats is discussed in four-page bulletin. Technical information includes listing of industrial chemicals to which lining is resistant. Bulletin also summarizes limitations in use of lining. Photographs show typical applications and condition of lining after prolonged use.

Lining can be applied in thicknesses up to 3/32" and are said to be easily repaired. It is reported that material does not absorb liquids and is ready for use with different liquid after rinsing. Bul K is issued by Metalweld Inc., Dept. CP, 26th & Hunting Park Ave., Philadelphia 29, Pa. When inquiring specify CP 3940 on handy form, pages 2 and 3.

Illustrates line of casters, wheels, and hand trucks

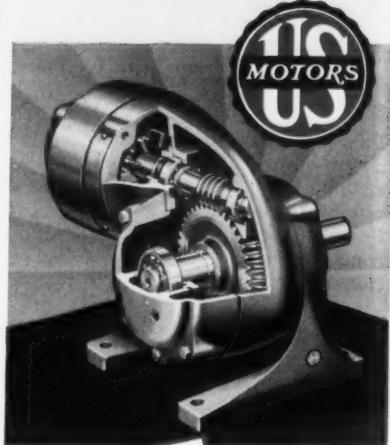
Fully-indexed catalog uses photographs and specifications to survey caster and wheel models designed to handle light, medium, or heavy loads. Booklet introduces line of casters for use on inverted angle-steel tracks or on flat floor surfaces. Floor locks and position swivel locks are also shown in 36-page catalog. Appropriate dimensions are included with sectional illustrations of various casters.

Display of wheel models includes steel, rubber, and Durastan plastic types with capacities ranging up to 3500 lb. Catalog offers practical tips on selection and application of right models to fit varied conditions. Concluding section of booklet is devoted to description of hand and stock trucks. Cat CT-52 is issued by The Rapids-Standard Company, Inc., Dept. CP, 342 Rapistan Bldg., Grand Rapids 2, Mich. When inquiring specify CP 3941 on handy form, pages 2 and 3.

Information on simple method for humidity control

Four-page bulletin recommends method for humidity control by means of a small refrigeration unit. Air is drawn over coil, precipitating out the moisture which drips into a bucket.

On first page a general discussion of humidity is given with a review of relative humidity and dehumidification. Mention is made of harm excess humidity can cause by



NEWEST OF ALL MOTORS

Compact Power for Low Speeds

U. S. Motors presents an entirely new line of right-angled, low speed motors—Type GW Syncrogears. Parabolic contours of drip-proof housing lend smooth, graceful appearance. 20 to 155 rpm. 1/3 to 3 h.p.

Right-Angle, Worm-Gear

Right-angle provides "short hitch" and compact hook-up, of special appeal to Design Engineers seeking most modern power drive to mount directly upon machine.

TYPE GW

U.S. SYNCROGEAR

WITH CANTILEVER DESIGN

Cantilever design protects gear alignment by preventing distortion of gear and motor housing. Rigid one-piece pyramidal base absorbs mounting stresses. "Spread-eagle" feet insure utmost stability.

U. S. ELECTRICAL MOTORS Inc.
Los Angeles 54, Calif. • Milford, Conn.



Get New Bulletin
Just off the press—profusely illustrated Bulletin presents complete details with multi-color illustrations. Various types and sizes. Full of facts how to apply right-angle power for longer life.

REQUEST FOR TYPE GW BULLETIN

U. S. Electrical Motors Inc.
Box 2058, Los Angeles 54, Calif. • Milford, Conn.
Send new 8-page Type GW Syncrogear Bulletin

NAME _____

COMPANY _____

ADDRESS _____

CITY _____ ZONE _____ STATE _____

When inquiring check CP 3942
on handy form, pgs. 2-3

corroding metal or forming mold on food products, mildew on textiles, or flush on leather or plastics. Humidity can be controlled by air conditioning, by passing air over chemicals, or by procedure advised here where air is passed over a cold coil.

Advantages of proposed plan are that it is less expensive than air conditioning and it is not necessary to dispose of any chemicals or reactivate them. Also a large heat rise does not occur. Unit is 13" by 13" by 29 1/2" high and weighs 86 lb. It will service 13,500 cubic feet of enclosed space. Brochure also discusses several humidity measuring devices.

"A Few Facts About Dehumidification For Industry" is issued by Abbeon Supply Co., Dept. CP, 179-15 Jamaica Ave., Jamaica, N. Y. When inquiring specify CP 3943 on handy form, pages 2 and 3.

**Suction and pressure conveyors
to handle bulk materials**

Case histories serve to illustrate uses of suction and pressure type conveyor. Suction conveyor is actuated by vacuum pump which maintains partial vacuum throughout the system. According to 24-page bulletin, it is suited for delivery of material from several pick-up points to one destination. With less than atmospheric pressure in lines, no dust can escape from system. In pressure type conveyor, blower is located ahead of intake mechanism; and materials are moved by air pressure to desired point. This system is designed for moving materials from one or more sources to several destinations.

Schematic diagrams show installation of conveyors and their functions in various plants. Two-color bulletin includes photographs of equipment in actual operation. Conveyors may find service in unloading, process distribution, blending, weighing, and reclaiming operations of bulk materials. Units are said to be used in processing substances such as alumina, calcium compounds, soda ash, and several other chemicals, as well as cellulose acetate, copolymers, phenolic resins, etc.

Various intake mechanisms are shown in addition to receiver units and accessory equipment. Bul 529 is issued by Dracco Corporation, Dept. CP, Harvard Ave. and E. 116th St., Cleveland 5, Ohio. When inquiring specify CP 3944 on handy form, pages 2 and 3.

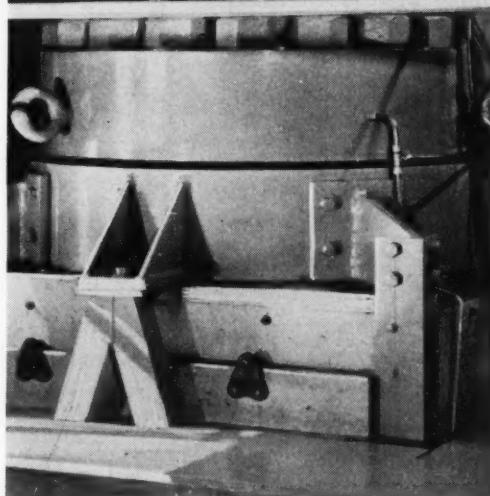
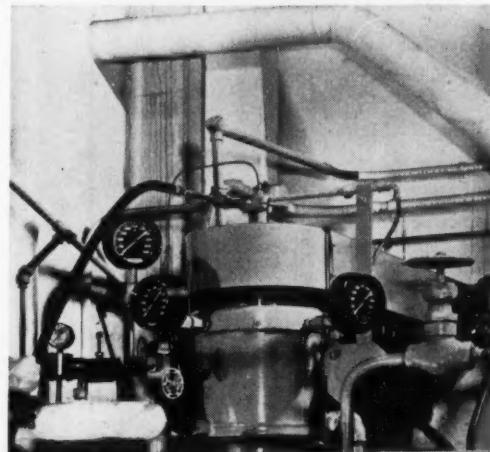
**Pictures show many uses
of ventilating hose**

Four-page bulletin illustrates multiple applications of flexible, ventilating hose. Standard hose products are made with cotton or nylon fabrics. Material is saturated with neoprene compounds to insure resistance to acids, oil, abrasion, and moisture. Hose is reinforced with spiral wiring and has centerline bending radii approximately equivalent to diameter, without deep creases or fold. Sizes range from 1 1/4 to 28" ID. Tubing may be used for plant services such as air conditioning, ventilation, dust collection, and fume control.

Industrial uses, which are shown in two-color bulletin, include operations such as recirculation of ammonia fumes, exhausting textile fibers, cooling electronic equipment, chemical processing, etc. Bulletin states that hose is airtight, has low friction losses, and may be used for pressure or suction. Bul 34 is issued by American Ventilating Hose Co., Dept. CP, 100 Park Ave., New York 17, N. Y. When inquiring specify CP 3945 on handy form, pages 2 and 3.

WHAT PRESSURE? TEMPERATURE? MATERIALS? CAPACITY?

BLAW-KNOX HAS WHAT YOU NEED IN AUTOCLAVES



100 gal. Chrome-Vanadium autoclave, for 3000 psi working pressure, with staged-type stuffing box.



5 gal. stainless steel, electrically-heated autoclave for 2000 psi working pressure.

- Sizes and types for every reaction.
- Patented stuffing box design for trouble-free service.
- Meet all ASME and State codes.
- Can be fabricated from your drawings.

For information on Blaw-Knox Autoclaves and other process equipment, write for Bulletin 2383.

PROCESS EQUIPMENT DEPARTMENT

BLAW-KNOX DIVISION

OF BLAW-KNOX COMPANY

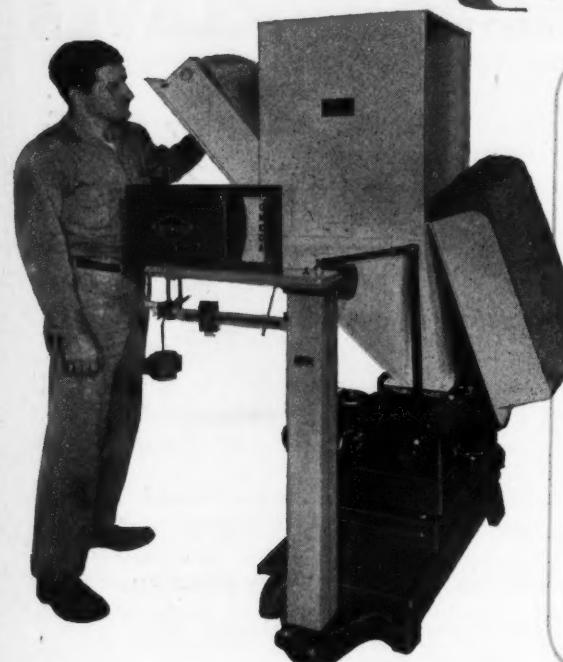
2076 Farmers Bank Bldg., Pittsburgh 22, Pa.

Other offices in Principal Cities

BLAW-KNOX **PROCESS**
EQUIPMENT

When inquiring check CP 3946 on handy form, pgs. 2-3

**FEED DRY ADDITIVES
AT LOW RATES . . .**



*Continuously-
Accurately-
Automatically!*

ADVANTAGES

- Integral hopper** holds two bags or an entire 125 lb. drum of dry material. When required, feeder can be furnished with 5 cu. ft. round hopper.
- Low filling height** of approximately 36 in.
- Dust-free filling** saves valuable materials . . . simplifies plant housekeeping.
- Accurate measurement** with large feeding orifice which prevents stoppage by small lumps.
- Automatically lubricated driving mechanism.**
- Percentage adjustment** with rate of feed scale graduated 0 to 100.
- Uniform rate of feed** controlled by variable speed drive.
- Positive hopper agitator** prevents packing of material in hopper.
- Dosage check** by means of weighing scales.

Modern processing systems demand the extremely accurate feeding of dry additives provided by Omega Disc Feeders. Now, even the feeding of a few ounces to a few pounds of dry material per hour can be as closely regulated as the rest of your automatic processing systems.

This is a complete "packaged" system. Install it; load it; set it; and forget it. Like other Omega feeding and blending systems, Omega Disc Feeders are designed to eliminate costly manual operations and to save money and

improve process control by providing greater accuracy of dry material feed.

The Model 51 Omega Disc Feeder has a maximum feeding capacity of 10 cu. ft. per hr. Write us about your continuous processing and blending problems. We will gladly show you how the various models of Omega Disc Feeders and other equipment can be adapted to your own particular needs. Omega Machine Company (Division of Builders Iron Foundry), 387 Harris Ave., Providence 1, Rhode Island.



OMEGA
THE LAST WORD IN FEEDERS

Omega manufactures a complete line of volumetric and gravimetric feeders for dry materials and for gravity feeding of liquids and solutions..

When inquiring check CP 3947 on handy form, pgs. 2-3

NEW LITERATURE

Discusses role of cloth tube dust collectors

Four-page periodical reports value of cloth tube type dust collectors in handling various dust and fume control problems throughout industry. Among problems considered are lead oxide dust handling in manufacture of storage batteries, wood dust collection, rock dust collection from aggregate plants, and mica collection in roofing manufacture. Discussion surveys recent developments in design of cloth filter collectors. Cutaway illustrations shows air flow through cloth tube type collector.

"Dust and Fume Topics," Vol. 1, No. 1, is issued by American Wheelabrator & Equipment Corp., Dept. CP, Mishawaka, Ind. When inquiring specify CP 3948 on handy form, pages 2 and 3.

Practical approach to problems in materials handling

Second edition of book emphasizes practical aspects of materials handling. Publication covers warehousing and shipping operations and suggests effective measures to coordinate these activities. It includes observation and analysis of hundreds of handling operations of major corporations. Book recommends procedure to reduce costs and to speed up production.

Several actual cases are cited to show how firms have solved their handling problems. These cases are supported by facts and figures. Among topics discussed are the selection of labor-saving equipment, services that may be expected from specialized equipment, and a survey of different types of mechanical handling equipment and what they are designed to do. To obtain "Materials Handling," remit \$6.65 direct to Prentice-Hall, Inc., Dept. CP, 70 Fifth Ave., New York, N. Y. When inquiring specify CP 3949 on handy form, pages 2 and 3.

Operating sequence and installation of altitude control valves

Sixteen-page bulletin presents illustrations, operating sequence, and installation arrangements of various single and double acting altitude control valves. General instructions, list of parts, and dimensions are shown in addition to a special section of bulletin devoted to maintenance. Bul W-4 is issued by Golden Anderson Valve Specialty Co., Dept. CP, 2101 Keenan Bldg., Pittsburgh 22, Pa. When inquiring specify CP 3950 on handy form, pages 2 and 3.

Fork trucks lift 3000 to 4000 lb at 18 to 24" load center

Three bulletins give specifications of diesel and gasoline powered fork lift trucks. All trucks are similarly constructed and vary only in lifting capacity and load center. Bulletin 1579 applies to trucks with 3000 lb capacity at 24" load center; Bulletin 1580 applies to 4000 lb capacity at 18" load center; and Bulletin 1581 is concerned with fork lift trucks of 4000 lb capacity at 24" load center.

Height of load lift is available to 72, 84, 108, 114, and 120". Lifting mechanism is operated by hydraulic lift cylinder. Lifting pressure is supplied by gear type pump coupled directly to engine crankshaft. Steel carriage is designed to permit quick and easy lateral adjustment of forks. Carriage is mounted on anti-

friction rollers, and is equipped with side thrust rollers to reduce frictional losses. Two independent roller type chains are utilized for safety, since each chain has sufficient capacity to handle full load.

Brief description covers each component of gasoline powered and diesel powered trucks. This information provides specifications for the engine, transmission, differential, electrical system, steering gear, brake, frame, etc. Bulletins 1579, 1580, and 1581 are issued by The Buda Company, Dept. CP, Harvey, Ill. When inquiring specify CP 3951 on handy form, pages 2 and 3.

Chart summarizes standard specs for steel castings

Standard specifications for more than 70 designated classes of steel castings are incorporated in comprehensive summary chart. Work is intended to serve as reference aid to design engineers and purchasing department engineering staffs. Chart covers pertinent data on general engineering types of steel castings as well as recently adopted specifications and revisions of previous specification standards.

Tabular listings include types of heat treatment, chemical compositions and mechanical properties of varying specifications. Chart gives detailed reference data on specific tensile strength, yield point, elongation, impact hardness, and other indicated test procedures: "Summary of Standard Specifications for Steel Castings" is issued by Steel Founders' Society of America, Dept. CP, 920 Midland Bldg., Cleveland 15, Ohio. When inquiring specify CP 3952 on handy form, pages 2 and 3.

Technical data covers formulations of sodium dispersions

Four-page bulletin summarizes preparation, properties, and uses of highly reactive form of metallic sodium. Technical data is presented on formulation of sodium dispersions in various media. Typical combinations of media, dispersants, and stabilizers are presented along with sodium particle sizes in resultant systems. Sodium content, stability, fluidity, and other pertinent properties of these dispersions are also discussed. Bul 104 is issued by National Distillers Chemical Company, Dept. CP, Ashtabula, Ohio. When inquiring specify CP 3953 on handy form, pages 2 and 3.

Gives operation, features, design of deaerating heaters

Twelve-page bulletin provides functional review of tray-type deaerating heaters for use in water treating processes. Introductory section of two-color bulletin explains principles of successful deaeration and itemizes essential elements of deaerating heater. Features of tray-type and spray-tray-type heaters are listed in tabular form; and sectional illustrations permit identification of various parts.

Several photographs show deaerating heaters which are in actual operation. Installations are shown which utilize 500,000, 200,000, and 180,000 lb per hr tray-type deaerating heaters. Bulletin closes with brief description of heater equipment such as overflow valves, oil separators, heater shells, etc. Bul WC-106 is issued by Graver Water Conditioning Co., Div., of Graver Tank & Mfg. Co., Inc., Dept. CP, 216 W. 14th St., New York 11, N. Y. When inquiring specify CP 3954 on handy form, pages 2 and 3.



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BRICK • STRUCTURAL CARBON • SULPHURIC ACID CUTTERS • HYDROCHLORIC ACID ABSORBERS

When inquiring check CP 3955 on handy form, pgs. 2-3

- STRENGTH AND EASE OF INSTALLATION
- HIGH HEAT CONDUCTIVITY
- SIMPLICITY OF FABRICATION AND MODIFICATION IN THE FIELD
- RESISTANCE TO CORROSION AND THERMAL SHOCK
- NON-CONTAMINATION

The term "Karbate" is a registered trade-mark of Union Carbide and Carbon Corporation

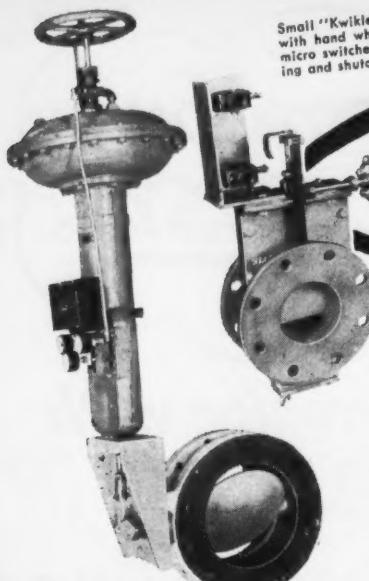
NATIONAL CARBON COMPANY

A Division of Union Carbide and Carbon Corporation

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Small "Kwikleen" slide valve with hand wheel control and micro switches for flow starting and shutoff.

Rockwell Valves Have It

TIGHTNESS—commercial, drip tight or air tight construction to meet your needs.

PRESSES—built rugged for operation at any pressure—even to 600 p.s.i., if necessary.

TEMPERATURE—as high as 2000° F.

RESISTANCE—valves made of any metal or rubber-lined for resistance to corrosion or abrasion.

CONTROL—lever, wheel, air diaphragm, air or hydraulic cylinder, electric motor, solenoid, float, etc.

SIZES—from 1" to 72" and larger.

USES—wherever flow of air, gases, liquids or solids requires positive, safe control and shut-off.

Get the Rockwell Valve Catalog

Heavy duty butterfly valve with rubber-lined body and alloy trim for tight closure at 80 p.s.i., equipped with air diaphragm operator, valve positioner, pressure regulator and auxiliary handwheel.

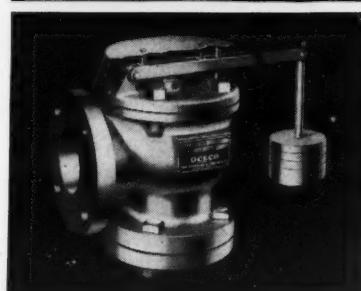
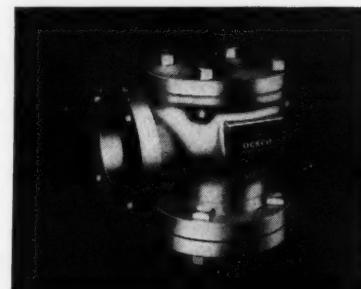
ROCKWELL VALVES

W. S. ROCKWELL CO. • 220 Eliot St., Fairfield, Conn.

When inquiring check CP 3956 on handy form, pgs. 2-3

OCECO vacuum and pressure RELIEF VENTS

• Ideally suited for a wide variety of vacuum and pressure relief requirements. Cast steel housings. Bronze or stainless steel trim. 3" x 3"; 4" x 4"; and 6" x 6" sizes. Standard A.S.A. flanges. Vacuum setting, 1/2 oz. to 1 lbs. per square inch. Pressure relief valves provided with a lever and weight for settings from 2 lbs. to 30 lbs. per square inch as desired. Write for fully descriptive data sheet.



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THE JOHNSTON & JENNINGS CO.
division of PETTIBONE MULLIKEN CORP.

4751 West Division St.

Chicago 51, Illinois

When inquiring check CP 3957 on handy form, pgs. 2-3

NEW LITERATURE

Case history synthesis of motor applications

Over 100 case histories of motor applications are depicted in 35-page booklet. Most testimonials are illustrated and each gives particular problems involved, motor choice for the job, and results. In many cases, geographic location and user's name are included.

Applications pertain to petroleum, chemical, textile, and mining industries. Booklet B-4769 is issued by Westinghouse Electric Corporation, Dept. CP, Box 2099, Pittsburgh 30, Pa. When inquiring specify CP 3958 on handy form, pages 2 and 3.

Towing truck can turn in narrow aisles

Sixteen inch diameter turntable of towing truck illustrated in 4-page bulletin allows easy maneuvering in tight quarters. Turning radii are shown in diagram. Machine has dead man control, with power being cut and brakes applied when handle is full up or down. Other advantages are direct gear drive, two forward and two reverse speeds, and enclosed brake and battery compartments.

Normal capacity is 200 lb, with 700 lb maximum. Truck weighs 2170 lb with 19 plate lead battery. Dimensions are 48 1/2" long, 33" wide, and 33" high. Bulletin P-996 is issued by The Yale & Towne Mfg. Co., Dept. CP, Philadelphia 15, Pa. When inquiring specify CP 3959 on handy form, pages 2-3.

Catalogs equipment for milling industry

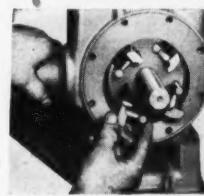
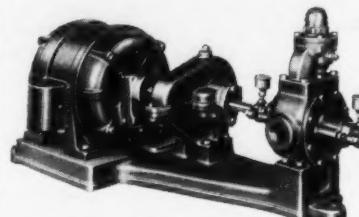
Sixteen-page bulletin includes description of various pieces of equipment for milling industry. Equipment is reported to be built to meet sanitation requirements of processing machinery. Featured item is roller mill, which is reported to provide closest approach to automatic milling yet devised.

Each machine is illustrated and briefly described according to capacity and operational features. This listing includes flaking and compounding mills, all-metal gyratory sifters, rotary dryers and coolers, metal divider, service elevator, and power equipment.

Bul 06B6194D is issued by Allis-Chalmers Manufacturing Company, Dept. CP, 1151 S. 70th St., Milwaukee 1, Wis. When inquiring specify CP 3960 on handy form, pages 2 and 3.

YOU NEVER SCRAP PUMPS LIKE THESE!

(They're BLACKMER PUMPS)



HERE'S WHY...

Blackmer Rotary Pumps are self-adjusting for wear. When finally worn out, change the vanes, like changing blades in a razor, and you save the cost of a new pump.

Learn how Blackmer's two vane types offer the most efficient pump for your specific applications. Write for Folder "G-1-A" . . .

BLACKMER PUMP CO., GRAND RAPIDS, MICH.

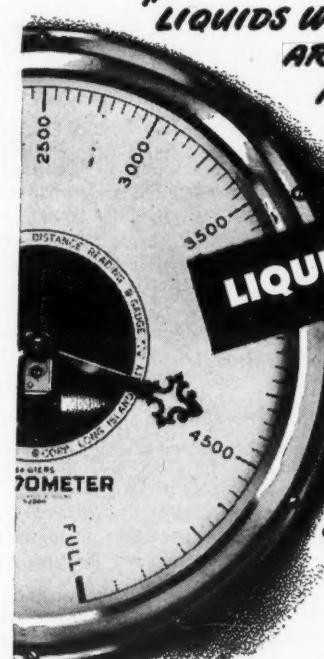
When inquiring check CP 3961 on handy form, pgs. 2-3

"LIQUIDS WORTH STORING
ARE WORTH
MEASURING"

with a

LIQUIDOMETER

Tank
Gauge



- FOR GAUGING LIQUIDS OF ALL KINDS
- 100% AUTOMATIC
- APPROVED BY UNDERWRITERS' LABORATORIES

WRITE FOR COMPLETE DETAILS

THE LIQUIDOMETER CORP.

38-18 SKILLMAN AVE., LONG ISLAND CITY, N.Y.

When inquiring check CP 3962 on handy form, pgs. 2-3

CHEMICAL PROCESSING

NEW LITERATURE

Liquid, plastic, and felt materials combine for roof protection

Six-page folder uses photographs to show procedure of installing one- and two-ply built-up roofs. Cold process requires no heating or thinning of liquid, plastic, or felt materials. Pictorial tour covers step-by-step operation of cleaning roof, pouring and spreading preservative, and imbedding successive strips of felt. Cutaway illustrations show layer-cake arrangement of built-up roof. Material specifications given for laying roofs over area of 100 sq ft.

Felt material is saturated with same type of processed asphalt which forms chief ingredient of roof preservative. According to folder, common asphalt content yields bonding which is effective against weather exposure. Methods of preparing old surfaces for coating are discussed. This information covers roofs constructed of metal, gravel, paper or felt, and concrete. "Hallemite Cold Process Built-Up Roofs" is issued by The Hallemite Manufacturing Co., Dept. CP, 2446 W. 25th St., Cleveland 13, Ohio. When inquiring specify CP 3963 on handy form, pages 2 and 3.

Cutaway view to highlights of high pressure pump

Construction and operating features of high pressure pump are reviewed in six-page bulletin. Unit is intended to satisfy requirements for self-contained, high pressure hydraulic power source. Bulletin illustrates applications calling for pressures up to 5000 psi as well as special installations which require up to 20,000 psi. Cutaway illustration is supplemented with brief descriptive paragraphs which emphasize construction features of pump.

Specifications and dimensions are included for pump. Bulletin also tells how on-the-job power variations can be effected by interchange of plungers and liners. "High Pressure Triplex Pump" is issued by Kobe Inc., Division of Dresser Equipment Co., Dept. CP, Huntington Park, Calif. When inquiring specify CP 3964 on handy form, pages 2 and 3.

Records combustion performance and density of smoke

Two-page bulletin describes smoke recorder for determining stack smoke density and combustion performance. Unit is equipped with red and green signals to mark bounds of good combustion. Bulletin includes specifications for light unit, photo unit, and recorder. Installation and wiring diagrams are presented for smoke recorder. Bul 512 is issued by Ess Instrument Company, Division Ess Specialty Corporation, Dept. CP, Bergenfield, N. J. When inquiring specify CP 3965 on handy form, pages 2 and 3.

Specs and 'variation' drawings of expansion joints

Complete information on selection and installation of packless expansion joints is provided in 28-page bulletin. Nine pages of tables give weights and dimensions for single and double self-equalizing joints, and for non-equalizing joints. Sizes of three types range from 3 to 54 inches. Dimensional drawings accompany tables.

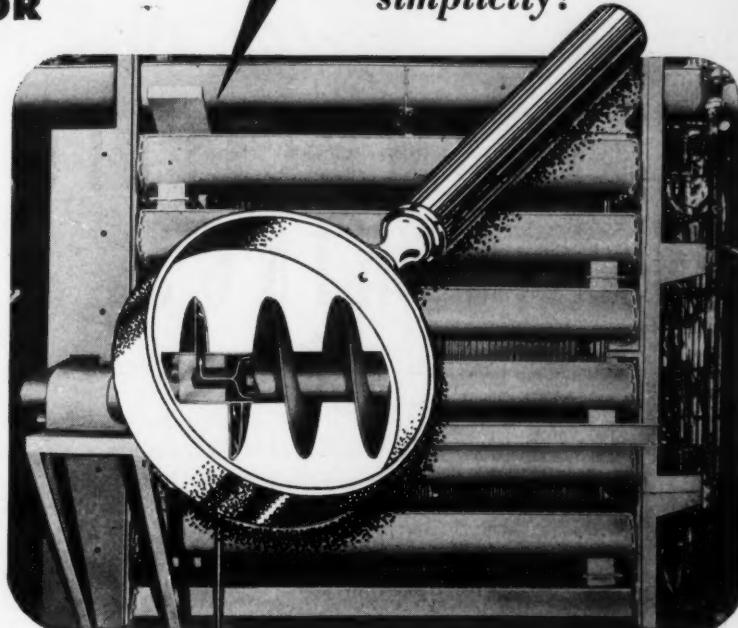
Feature of bulletin is group of 29 drawings which show variations from the basic expansion joint. They may be used to solve various pipe expansion problems. Drawings are supplemented with explanatory information. Bul 35-51A is issued by American District Steam Co., Inc., Dept. CP, North Tonawanda, N. Y. When inquiring specify CP 3966 on handy form, pages 2 and 3.

Technical data on the revolutionary new

holo-flite*

(HOLLOW-FLIGHT)
PROCESSOR

— the Continuous-Flow Heat-Exchanger that is setting new standards of compactness! adaptability! simplicity!



Here's the HOLO-FLITE principle...

Two or more screw conveyors rotate slowly in a trough. The blades and shaft of each flight of conveyors are hollow, with provision for circulating the heat-transfer agent through them. The product to be cooled or cooked is moved along the trough, being constantly rotated into, around, over and under the conveyor screws as it moves.

Thus, a continuous thermal transfer takes place between the product and the heat-transfer fluid circulating in the blades. The product is cooled or cooked in continuous-flow without the "stop-and-go" losses of batching operations... and cooled products can be packaged directly from the HOLO-FLITE discharge—saving space, time and additional handling.

THIS 6-TIER HOLO-FLITE cools 7 tons of cottonseed press cake per hour from 285° to 89°F. in a total floor space of only 28 sq. ft.
(Inset) Enlarged cutaway view of HOLO-FLITE screw showing heat-transfer principle.

Here are typical HOLO-FLITE advantages

The HOLO-FLITE principle is so unique it is setting completely new standards of performance in many ways. For example...

*Reg. T.M.

The HOLO-FLITE Saves Space
—It requires as little as 1/5th the space of other units of comparable capacity because (1) it has far greater heat-transfer area per cubic foot of space... and (2) the flights can be "tiered" as high as desired to give maximum capacity in very small floor areas.

The HOLO-FLITE is Versatile
—Processed product can be fluid, pulp or paste—granular, crys-

talline or powdered solid. Heat-transfer fluid can be refrigerant, cooled or ambient water, steam, oil or any other desired fluid, at any normal temperature range.

The HOLO-FLITE is Dust-Free
—Its gentle action provides large heat-transfer action without dust and with negligible particle abrasion. Simplifies installations, assures higher quality product.

The HOLO-FLITE Is Adaptable
—It can easily be designed to handle virtually any capacity by (a) varying the diameter of the screws (7" to 16")... (b) varying the length of the screws (8 ft. to 20 ft.)... (c) varying the number of intermeshing screws per trough (2, 4, or 6)... and (d) varying the number of tiers stacked on top of one another (1 to 10, or more).

The HOLO-FLITE is in daily operation on such typical products as sand, cement, cottonseed cake, soybean meal, borax, salt, sugar, baby foods and many other equally-varied products.

What is your problem? Our engineers will be glad to assist you in making the most of HOLO-FLITE advantages. Write wire, or phone the office nearest you!

Want More Facts? This 8 page booklet describing the HOLO-FLITE in greater detail will gladly be sent on request. No obligation, of course.

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Precipitation
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ENGINEERS, DESIGNERS & MANUFACTURERS OF EQUIPMENT FOR
COLLECTION OF SUSPENDED MATERIALS FROM GASES & LIQUIDS

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When inquiring check CP 3967 on handy form, pgs. 2-3

FOR PERFECT SEALING AT THE LOWEST COST

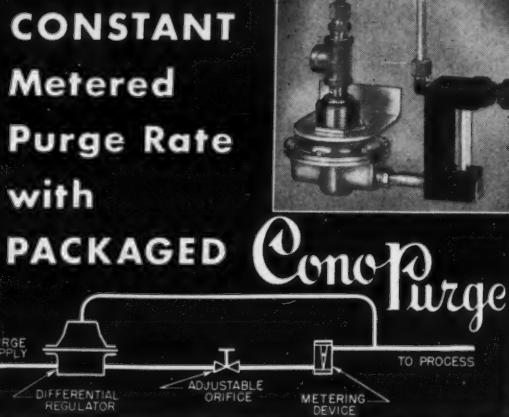
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Sales and Service Offices Thruout the United States and Canada

When inquiring check CP 3968 on handy form, pgs. 2-3



No supervision needed at installation; only two pipe connections required. By providing absolute control of differential pressure across an adjustable orifice, Cono Purge assures constant rate of flow regardless of variations in upstream or downstream pressures. Primarily for use as a purging system on flow metering service or on bubble type level gauges in chemical plants, paper mills, breweries and other industries where suspended matter or corrosive fluids must be kept out of meters and meter piping. BULLETIN H-11 shows how it works. Write for your copy today.

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CORPORATION**
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PHILADELPHIA 3 PA.

Cono Controls

To get more information on products see Readers Service Slip just inside the Front Cover

NEW LITERATURE

Studies in solubility of nitrocellulose

Eleven-page revision of technical booklet includes twenty charts which illustrate studies in solubility of maker's SS nitrocellulose. SS is a specialty nitrocellulose of different solubility characteristics than his regular RS type.

Charts are divided into four groups by use of separate colors. First set shows effects of varying viscosity and concentration of nitrocellulose.

Next group explains how solubility is effected by changing strength of ethanol. Last groups picture results of changing diluent or type of alcohol used.

Information is contained in booklet about use of SS nitrocellulose in heat-seal lacquers, aniline inks, and as a shellac modifier. "SS Nitrocellulose" is issued by Hercules Powder Company, Dept. CP, Wilmington, Del. When inquiring specify CP 3970 on handy form, pages 2 and 3.

Outlines service for oil refiners

Technical service for licensees to corporation's catalytic cracking methods is explained in 8-page bulletin. Ample illustrations of laboratory and pilot plant facilities show how refining companies can be assisted.

One phase of service performed is process development. This is directed toward finding of new reactions which may improve refining methods. Another division is in catalyst research to discover new catalysts and improve those being used at present. Laboratories are available with modern physio-chemical equipment. Engineering and technical service is discussed in last section.

Bulletin is issued by Houdry Process Corporation, Dept. CP, 1528 Walnut St., Philadelphia 2, Pa. When inquiring specify CP 3971 on handy form, pages 2 and 3.

Magnesium constructed hand trucks

Four-page bulletin illustrates six models of magnesium constructed hand trucks. Rated capacities are 250, 350, and 450 lb. Smallest truck weighs 9 lb. Bulletin concludes with tabulated specifications for frames, nose, and wheels. Bul TH-101 is issued by Magline, Inc., Dept. CP, Pinconning, Mich. When inquiring specify CP 3972 on handy form, pgs. 2-3.

When inquiring check CP 3969 on handy form, pgs. 2-3

**If a TRUCK DRYER
is Suitable for Your
Product...**



Send for a copy of this illustrated booklet. It describes the various styles of dryers and trucks, and the "National" formula for securing maximum speed, efficiency and economy in all drying operations.

"National" Truck Dryers are being used successfully for chemicals, pharmaceuticals, ceramics, cosmetics, minerals, yarn, rayon, cakes, tobacco, a variety of food products and small metal or mechanical parts. They are designed for either batch or continuous drying, with various methods of air circulation. Patented "Add-a-Unit" construction facilitates installation and provides for economical future expansion. The booklet gives complete details.

Chemical Dryers of
All Types and Sizes
Special Drying and
Heating Equipment

THE NATIONAL DRYING MACHINERY CO.
2709 N. Hancock Street, Philadelphia 33, Pa.

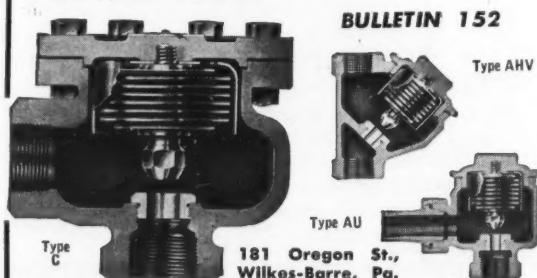
When inquiring check CP 3973 on handy form, pgs. 2-3

NICHOLSON TRAPS

SAVE 4580 LBS. OF STEAM PER CYCLE

A west coast processor reports that substitution of Nicholson traps for a mechanical type effected a cyclic saving per kiln of 550 gallons of condensate, or 4580 lbs. of steam. See why leading plants are increasingly adopting Nicholsons for advanced features: operate on lowest temperature differential; 2 to 6 times average drainage capacity. 5 types; sizes $\frac{1}{4}$ " to 2"; press. to 250 lbs.

BULLETIN 152



181 Oregon St.,
Wilkes-Barre, Pa.

W.H. NICHOLSON & CO.
TRAPS • VALVES • FLOATS

When inquiring check CP 3974 on handy form, pgs. 2-3

**Contains additional information
on heat exchangers**

Two sections on heat exchangers not in previous volume are included in 162-page, 3rd edition of "Standards of Tubular Exchanger Manufacturers Association." One covers mechanical standards for alloy steel heat exchangers, known as Class A. This part will be of particular usefulness to chemical industry. Second section is of a more general nature. It will be of value as a reference source to designers, fabricators, and users of heat exchangers. Revision has also been expanded with respect to mechanical and thermal standards to conform with current findings.

Volume brings together helpful data formerly available only from scattered sources. Tables are presented on maximum allowable stress values of alloy steels, copper and copper alloys, nickel and nickel alloys, and steel pipe and tubes.

Revised edition is published by Tubular Exchanger Manufacturers Association, a group of 12 companies.

Format is 8½ x 11", semi-flexible simulated leather cover, wire ring binding. To obtain "Standards of Tubular Exchanger Manufacturers Association" remit \$5.50 to TEMA, Dept. CP, 53 Park Place, New York 7, N. Y. When inquiring specify CP 3975 on handy form, pages 2 and 3.

**Reports time and money saved
by metallizing equipment**

By means of case histories, six-page house organ points to time and money saved by metallizing machinery. One story cites a saving of three month rental fee at rate of \$60.00 per hour plus the necessity of replacing \$1400.00 tugboat shaft. Other articles refer to metallizing lathe spindle, crankshaft, and interior of de-greasing tank. Spray gun can apply stainless steels, brass, tin, nickel, aluminum, and other metals. Photographs show actual operations of spraying metals. "Metco News" is issued by Metallizing Engineering Co., Inc., Dept. CP, 38-12 30th St., Long Island City 1, N. Y. When inquiring specify CP 3976 on handy form, pages 2 and 3.

**Handbook and flow rule
for fluid measurement**

Two important tools in flow meter engineering are being offered in combination purchase. The flow rule is intended to simplify calculation of primary elements and "Principles and Practice of Flow Meter Engineering" is basic text on fluid measurement.

Flow rule is designed for rapid solutions to problems of line size, flow rate, and orifice sizing. It has reversible slide with scales for gas on one side, liquids and steam on other side; and each fluid is identified by distinctive color. Accuracy of rule is reported to be closer than can be read. Overall length of rule is 12". Complete instructions and cowhide carrying case are included.

Handbook contains 418 pages of tables, curves, and textual material. It serves as one-source reference to important data and as authoritative guide to correct methods of measuring flow. Eight-page index is used to list extensive presentation of material which ranges from coefficient tables (gas, liquid, and steam) to weirs. To obtain combination flow rule and handbook, remit \$27 direct to The Foxboro Company, Dept. CP, Foxboro, Mass. Bought separately, price is \$7 for handbook and \$25 for flow rule.



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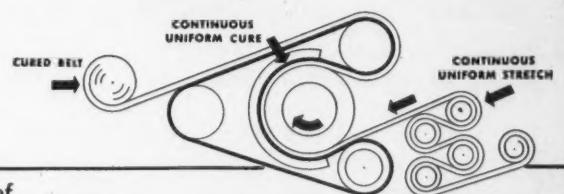
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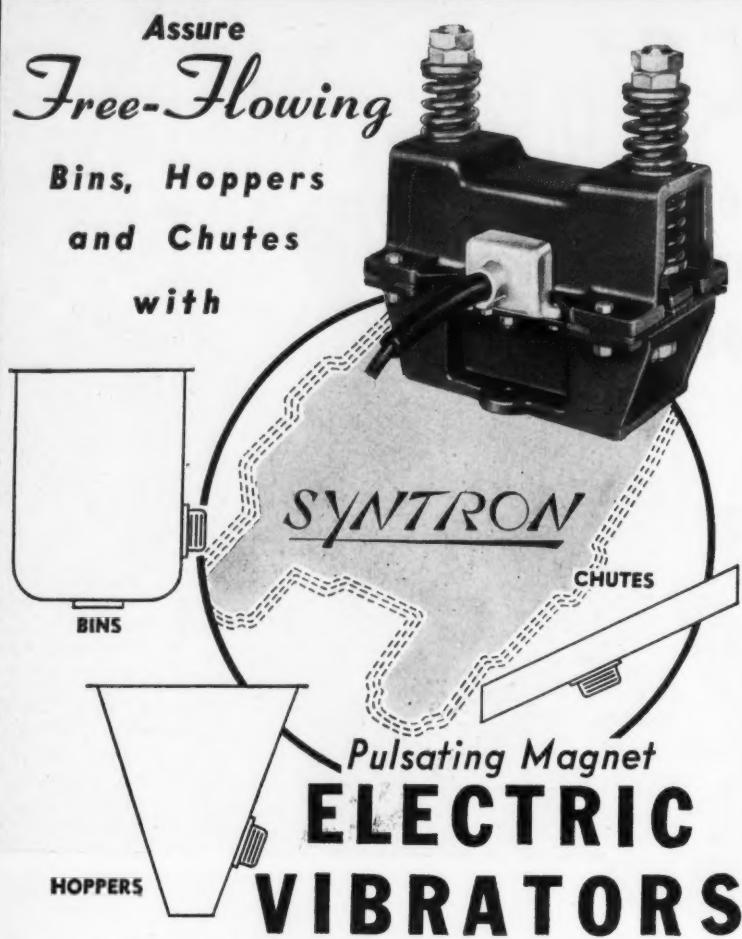
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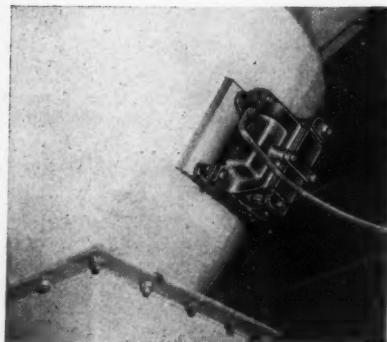
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Safe Handling of Corrosives

(Continued from page 6)

should preferably be mechanized as much as possible. There are on the market some excellent commercial carboy filters, pumps and siphons. Frequently one finds laboratory personnel attempting to transfer the contents of a carboy or glass container by the use of air pressure. This is a practice to be condemned as the carboy or container may fracture and the contents may thus be sprayed all over the laboratory.

If there is a physician in the plant or one on call, it should not be assumed that he knows how to treat burns caused by all the corrosives in use. Some of these chemicals are quite special, and it is asking too much of the doctor, who is not a chemist, to look at a burn and automatically know how best to treat it. The physician should be advised exactly as to the corrosive which was being handled and, by use of published information on these corrosives, helped in formulating his first aid procedure.

Another important item is to be sure that the people handling the substances know what they are. It may seem rather elementary, but there are routine procedures in laboratories frequently carried out by workmen or hourly paid technicians who do not know what they are handling. As a result, they may report to the doctor's office with a burn and yet be unable to inform the doctor what the burn has been caused by.

It is necessary to mention the hazards of over-treatment. Many laymen who are burned with corrosives enthusiastically "neutralize" the burn. That is, if they have a caustic burn, they douse it with vinegar; if they have an acid burn, they plaster it with sodium bicarbonate or even ammonia. This practice has two bad effects. In the first place, it prevents the rapid and full application of water, which in 99% of the cases is the best first aid procedure following corrosive burns; and secondly, the neutralizing technique is likely to form a salt which becomes lodged in the tissues so that by the time the man gets to the doctor, the latter has both the burn and the effect of the salt to treat. First aid procedure should follow the published data, and you will find that this data is based primarily on the application of copious quantities of water to the burned area.

We in industry have found that although corrosive burns will occur, despite the best preventive measures, permanent damage from such burns is almost nonexistent. This can be attributed to two causes. One, that the body, including the eyes, has an astonishing regenerative quality, and the other is that in industry in general, great pains have been taken to install safety showers and adequate well-stocked first aid rooms. These latter advantages should be available to laboratories.

Actually, the laboratory worker is engaged in more hazardous work than the chemical process operator. For one thing, he is likely to handle a wider variety of substances, and they are likely to be in more fragile containers. Most of his work is experimental, and the outcome of his experiments is not always known. Furthermore, and unfortunately, there is sometimes a feeling among technical personnel that their B. S. M. A., or Ph. D., degrees grant them a certain immunity to chemical injuries, and that they can handle reagents with an abandon that would result in a plant process operator being discharged.

In conclusion, let us review the essentials toward achieving safe handling of corrosive materials in the laboratory:

- 1) Prepare a list of all corrosives to be used in the laboratory.

When Your Process Demands

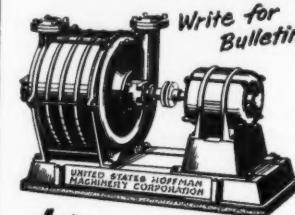
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- 2) List available data sheets relative to handling, and precautionary measures associated with the materials.
- 3) Prepare a list of and have available necessary protective equipment.
- 4) Study the characteristics of corrosives as regards to proper storage.
- 5) Establish procedures for handling corrosives and review these frequently to insure sound practices.
- 6) Establish first aid measures and include that of acquainting the physician with all available information and possible exposures.

Such procedures, if intelligently followed, will assure good results and minimize the occurrence and effects of most laboratory accidents.

Convention & Exhibit Schedule 1952

Aug. 12-14. 4th Western Packaging and Materials Handling Exposition, Shrine Convention Hall, Los Angeles, California.

Sept. 8-12. Instrument Society of America, National Instrument Conference and Exhibit, Cleveland, Ohio.

Sept. 9-13. American Chemical Society, Chicago Section, Seventh National Chemical Exposition, Chicago Coliseum, Chicago, Ill.

Sept. 11-13. American Institute of Chemical Engineers, Palmer House, Chicago, Ill.

Sept. 14-19. American Chemical Society, National Meeting, Atlantic City, N. J.

Oct. 14-16. The Society of Industrial Packaging and Materials Handling Engineers, 7th Annual Exposition, Chicago Coliseum, Chicago, Ill.

Oct. 20-21. National Association of Suggestion Systems, 10th Annual Convention, Drake Hotel, Chicago, Ill.

Oct. 28. Association of Consulting Chemists and Chemical Engineers, Annual Symposium, Belmont Plaza Hotel, New York, N. Y.

Nov. 6-8. American Association of Textile Chemists and Colorists, Annual Meeting, Statler Hotel, Boston, Mass.

Nov. 17-19. National Paint, Varnish and Lacquer Association, Annual Convention, Palmer House, Chicago, Illinois.

Nov. 20-22. Federation of Paint and Varnish Production Clubs, Annual Meeting, Palmer House, Chicago, Ill.

Nov. 25. Manufacturing Chemists' Association, Inc., Second Semi-Annual Meeting and Winter Conference.

Dec. 7-10. American Institute of Chemical Engineers, Annual Meeting, Hotel Cleveland (headquarters) and Carter Hotel, Cleveland, Ohio.

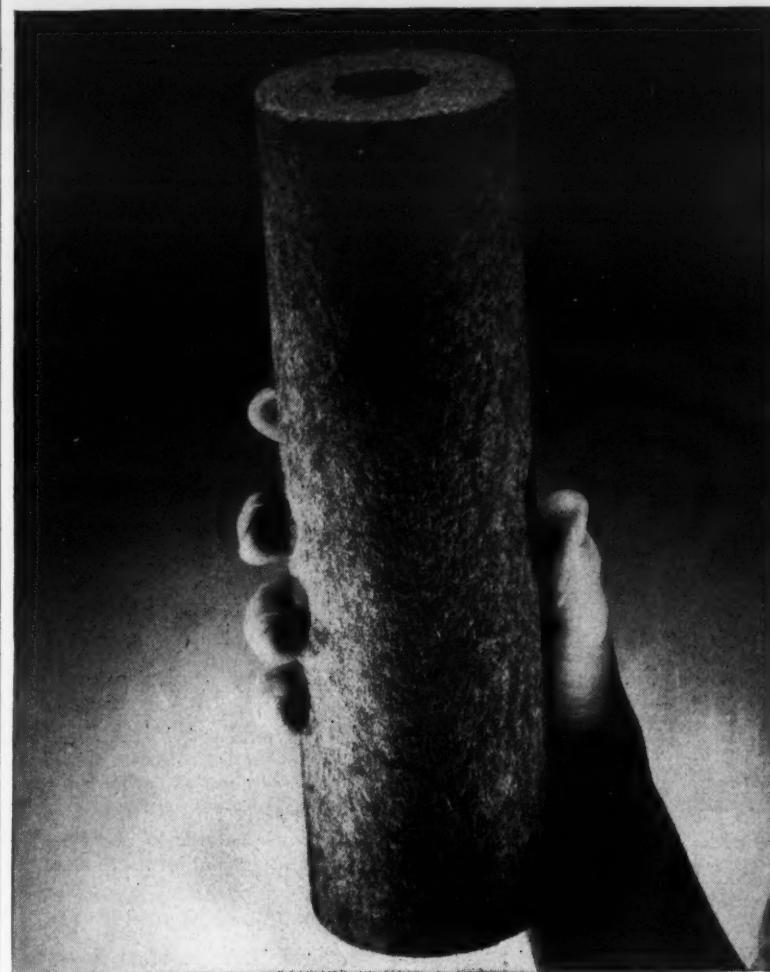
1953

March 8-11. American Institute of Chemical Engineers, Buena Vista Hotel, Biloxi, Miss.

April 26-29. American Institute of Chemical Engineers, Royal York Hotel, Toronto, Canada (Joint Meeting with the Chemical Institute of Canada.)

Sept. 13-16. American Institute of Chemical Engineers, Fairmont and Mark Hopkins Hotels, San Francisco, Calif.

Dec. 13-16. American Institute of Chemical Engineers, Annual Meeting, Hotel Jefferson, St. Louis, Mo.



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Expanding Chemical Production

Plan world's largest lithium plant in Va. to offset shortage

A three-way expansion program which would include construction of the world's largest lithium chemical processing plant at Sunbright, Va., that would more than double the nation's present capacity for lithium chemicals, is now being planned by the Foote Mineral Company, Philadelphia. Plant construction will start this summer so that the plant will be in operation by mid-1953.

Involving approximately \$3 million, the program would also triple lithium ore output of the company's property near Kings Mountain, N. C., and provide construction of facilities for quarrying and processing limestone at Sunbright.

In addition to being the world's largest, the new plant will be the most integrated of its kind. All raw materials processed at the Sunbright plant will be basic ores mined by the company or else they will be by-products of the firm's other operations.

Shortage of the chemicals is reflected in the DPA's placing them among the first in the list of materials currently insufficient to meet military and essential civilian demands.

Plans at Kings Mountain call for installation of additional mining, milling and processing equipment for the recovery of tin, columbite, and feldspar.

Biological laboratory scheduled for construction in Sept

A new biological laboratory, consisting of a main laboratory and two greenhouses and costing approximately \$400,000, will be under construction in September by the Hercules Powder Company at its experiment station near Wilmington, Del. The laboratory is expected to be ready for occupancy by April, 1953.

Applied research on insecticides, fungicides, herbicides, and defoliants will be carried on in the new building. Plant diseases and seed and soil treatments will also be studied. Research carried on by the company at independent commercial laboratories and other agricultural experiment stations will be coordinated through the new central unit.

Shell Chemical announces purchase of J. Hyman & Co.

Arrangements have been completed for the purchase by Shell Chemical Corp. of the stock of Julius Hyman & Co., Denver, manufacturer of agricultural insecticides aldrin and dieldrin. Also in the agreement is an arrangement with the Velsicol Corp. of Chicago for exclusive world-wide rights to these two insecticides. The Hyman Co. will continue operation under its present name.

Shell Chemical has marketed aldrin and dieldrin since their commercial introduction two years ago, at which time they were manufactured by Julius Hyman & Co. Earlier this year a court order granted patent rights on the insecticides to Velsicol Corp.

Middle West will be site of \$20 million plant for ammonia-urea

A more-than \$20 million ammonia-urea plant with a daily capacity of 250 tons, will be erected in the Middle West in the near future by W. R. Grace & Co., international industrial and trading concern.

The plant will synthesize the ammonia from natural gas; part of this ammonia will be converted to urea. The products will be sold for agricultural and industrial use. Plans are also underway for the integration of other petro-chemical manufacturing operations into the new plant.

\$1 million plant will add chemicals to southwestern area

Opening of the first plant in the Southeast to manufacture formaldehyde, synthetic resins, and hexamethylene-tetramine, and costing more than \$1 million, has been announced by the Borden Company Chemical Division.

Located at Demopolis, Ala., the new plant occupies about one-third of a 20-acre tract to permit future expansion. Initial annual production of the plant will approximate 20 million lb of formaldehyde, 24 million lb of synthetic resins, 1,200,000 lb of hexamethylene-tetramine, an intermediate product used by the plastics and chemical industries in manufacture of other products. If the current defense program requires it, production of "hexa" can be stepped up to 4 million lb annually.

The plant's output will be for use by the woodworking, furniture making, textile, paper, plastics, and foundry industries in the area, but much of it will go directly for defense production.

They're on their own for 18 years with patent rights for lead

World-wide rights for the commercial development of all its inventions pertaining to lead for a period of 18 years have been awarded to Knapp Mills, Inc., New York, by the American Viscose Corp. Knapp is the largest American producer of lead-clad steel and lead-clad copper. The current contract involves six issued patents and patents pending, and five further developments involving lead for which patent protection would be sought.

Chemists, engineers tour laboratory for sales service

More than 100 chemists and engineers recently toured the Tennessee Eastman Company's Kingsport laboratory as the company dedicated its new sales service laboratory with an open house.

The laboratory itself covers some 16,800 sq ft and is divided into four major sections. One section deals with problems of dyeing and finishing cellulose acetate and mixtures of acetate with other fibers. Activities of another section include the development, application, and testing of preservatives and antioxidants and their use in foods. The third section assists gasoline refiners

in determining how the company's gasoline additives can be used efficiently and economically. Fourth section includes separate laboratories for study of the use of these chemicals in such fields as protective coatings and plastics.

A physical testing laboratory and an analytical section are also provided for use by other sections as needed.

Polyvinyl chloride plant will soon produce

New facilities for the manufacture of polyvinyl chloride at Midland, Mich., by The Dow Chemical Co., including polymerization and drying units, are expected to be completed and in operation early this summer. With such production, the company will enter the polyvinyl chloride phase of the plastic industry.

Dow will supply this material in unformulated resin form and does not now plan to enter the fabrication fields of calendering, extrusion, or injection molding.

Ready to build \$10 million chlorine-caustic plant

A construction contract has been awarded by Hooker Electrochemical Company for a \$10 million chlorine-caustic plant at Montague, Mich., capable of annual production of approximately 100,000 tons. Operation is expected to begin by the end of next year.

Brine is to be piped from the company's own wells a short distance from the plant site. Test drilling in the 200-acre brine field has indicated salt concentration of over a million tons per acre. One salt well has been completed, and additional wells will be drilled later this year. Deep water shipping may eventually be utilized from White Lake into Lake Michigan.

Purchase Edco Corp. plant for insecticides

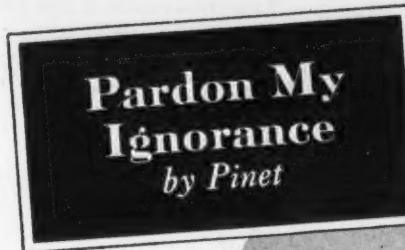
A new insecticide manufacturing plant at Elkton, Md., has been purchased from the Edco Corp. as part of the decentralization plans of the John Powell & Co., Inc., New York City. Under the new setup, the Elkton plant will supply insecticide materials for southern New Jersey and neighboring Atlantic Coast areas. Insecticides concentrates, used in the manufacture of household and industrial insecticides, will also be supplied out of Elkton to insecticide manufacturers.

Cellulose plant costing \$25 million is begun in Georgia

A \$25 million cellulose plant is now being constructed at Doctortown, Ga., on a 535-acre site by Rayonier, Inc. Operation is expected by 1954.

Gets "go-ahead" for ethylene plant construction in Texas

Government approval has been given to the Jefferson Chemical Company, Inc., for construction of facilities at its Port Neches, Texas, plant to manufacture ethylene oxide and ethylene glycol via the direct oxidation of ethylene. Under present plans, new facilities will consist of an additional feed gas line from the Texas Company's Port Arthur works, an ethylene cracking and fractionating unit, an ethylene oxide unit, and an ethylene glycol unit.



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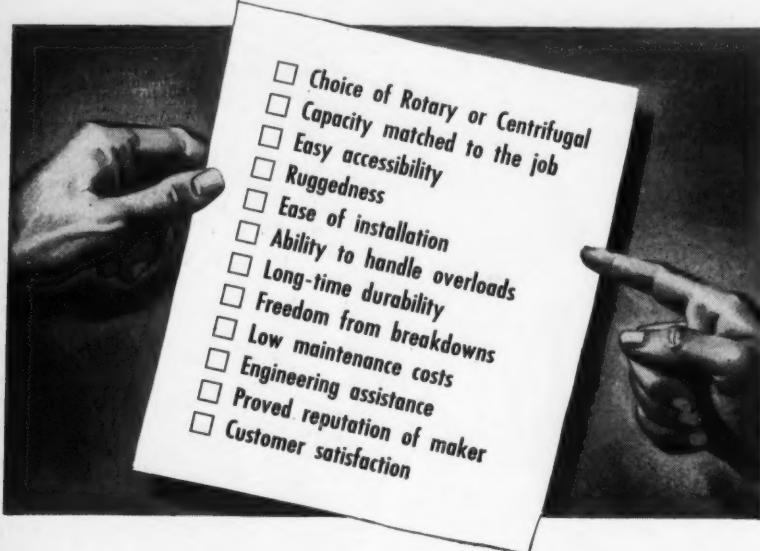
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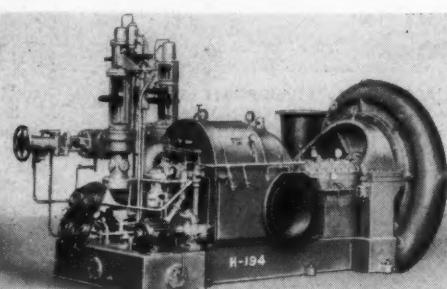
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Use this "quick-locator" when you want information on a specific type of process, equipment or material mentioned in the processing stories or the advertisements in this magazine. Everything discussed in this issue is given here, if you want more data you can write manufacturer direct . . . or turn to pgs. 2-3 and use the handy "Information Request Slip." This is a special service provided by the publisher . . . no obligation or charge, of course. The publisher contacts the proper manufacturers for you—information comes to you direct.

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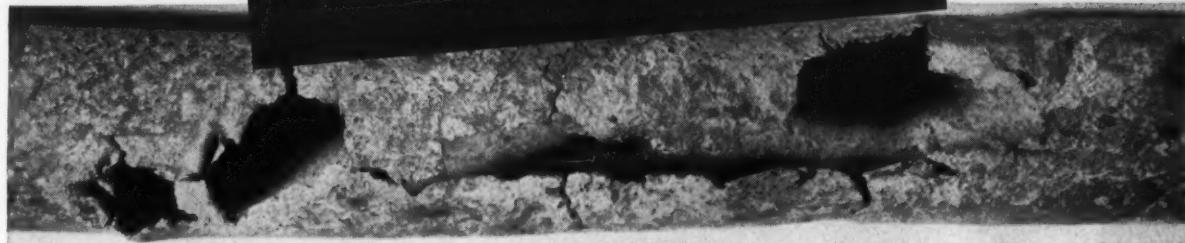
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research at work!



Photograph of a section of a failed tube showing excessive thinning and pitting of the outer surface. Note also the circumferential cracks.

CORROSION STUDIES CAN INCREASE THE ECONOMY OF COPPER ALLOYS

Copper and its alloys are notable for their resistance to corrosion under a wide variety of conditions. There are industrial applications where copper or the appropriate copper alloy should give an indefinitely long life, but where failure because of corrosion may result by reason of unsuitable design of equipment or improper control of environment. Further, there are many situations in which no commercial metal or alloy will have an extended life, but in which copper or one of its alloys possesses a combination of physical and chemical properties which render it the best obtainable material, when all factors, including ultimate costs, are taken into consideration. Hence correct specification becomes of great importance. Recognition of this by industry is responsible for the fact that the Revere Research Department devotes so much time to studying the corrosive effects of fluids and gases, and to preventive measures.

Recently a large manufacturer, who produces condensers as well as other equipment, reported that arsenical Admiralty tubes in steam-jet ejector were failing after five years. This length of service is not too bad, but nevertheless such tubes often last much longer. Could we make any suggestions?

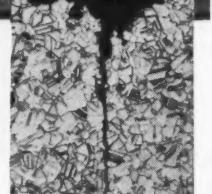
Seven failed tubes were examined for type of corrosion, metal and scale analysis. The facts were: outer surfaces were badly pitted and grooved with holes completely through in some areas; the inside surfaces were relatively untouched; cracking was circumferential, progressing from the outside; outer scale was largely cupric carbonates and copper sulfide; inner scale was calcium carbonate, cuprous oxide and some iron oxide. Microscopic examination of the cracks showed they originated in corrosion pits on the outside, progressing inward across grain boundaries, rather than along them. The transgranular path of fracture, together with other characteristics of the microstructure, definitely established the fact that the



Here the circumferential cracking of the outer surface can be seen.

Photomicrograph of a section through a tube showing transgranular corrosion-fatigue crack originating from the base of a pit on the outer surface of the tube. Magnification 225X. All photographs taken by the Research Department of Revere.

—



When inquiring check CP 3985 on handy form, pgs. 2-3

failure was of the corrosion-fatigue type. The corroding pits on the outside created stress concentration points of weakness, from which the cracks originated. Eventually the localized stress exceeded the endurance limit of the metal and it cracked.

The conclusion was, therefore, that damage was from two sources—the first being excessive carbon dioxide and the other non-condensable gases in the steam, which caused the excessive pitting and thinning. It is not unusual to have these and other corrodants present in damaging amounts in the air-ejector system, whereas they are not injurious elsewhere. The second cause of failure was excessive vibration somewhere in the unit which was responsible for the corrosion fatigue failure.

RECOMMENDATIONS. The copper-base tube alloy that generally possesses the greatest resistance to the non-condensable gases responsible for the corrosion of the Admiralty tubes is 5% aluminum bronze. Re-tubing with this was suggested. It was also recommended that steps be taken to effect a material reduction in tube vibration by placing a baffle in the steam inlet. In addition, it was pointed out that many operators find it good practice to discharge the after-condenser drain to the sewer instead of returning it to the system. By this means, the amount of carbon dioxide, ammonia and other gases in the system can be substantially decreased.

* * *

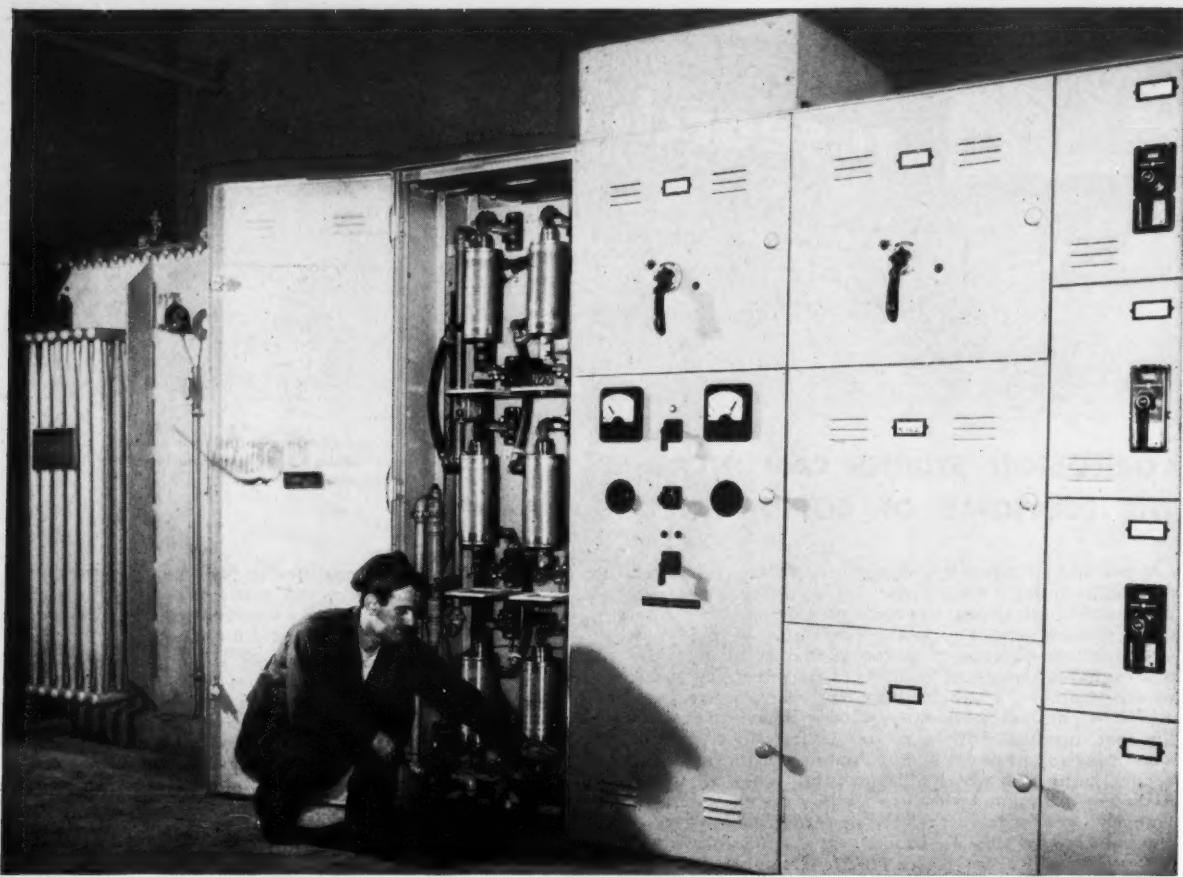
It is interesting to note that the Revere Research Department, located in Rome, N. Y., was able to determine these causes and suggest remedies without ever having seen the condenser. This is the result of modern equipment, and long experience in studying the problems of corrosion. If you have a problem regarding the corrosion of copper and copper alloys, or aluminum alloys, why not take it up with the nearest Revere office? Remember, corrosion that is too rapid wastes both your money and our national resources.

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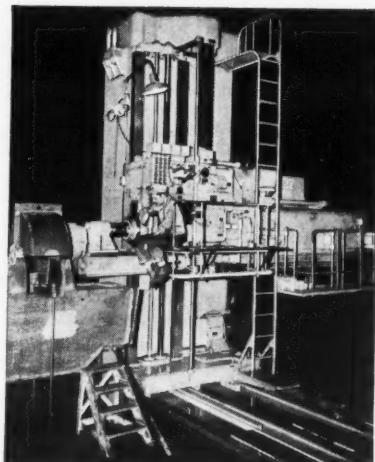
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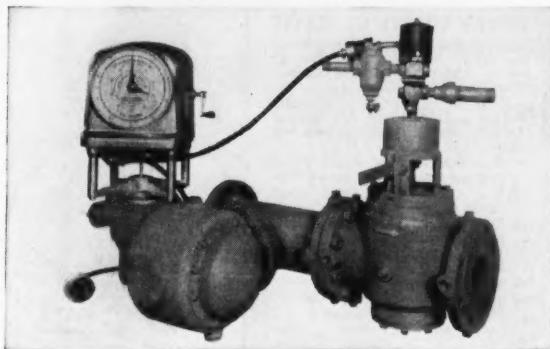
This giant boring mill operates on d-c power supplied by the 300-kw G-E Ignitron Rectifiers at Alliance.

GENERAL ELECTRIC

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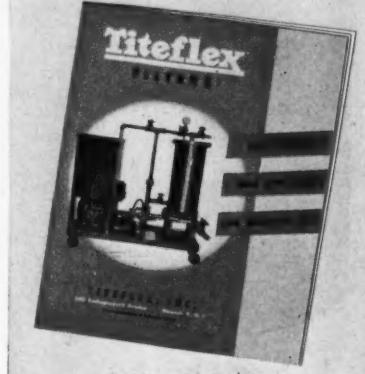
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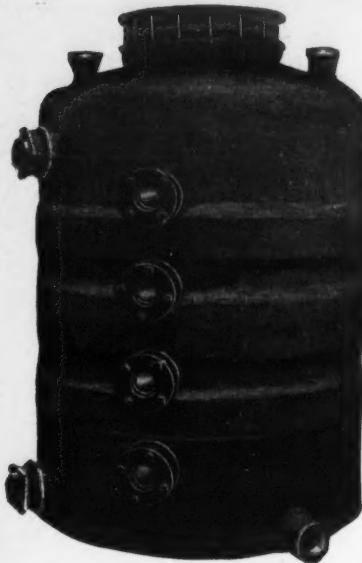
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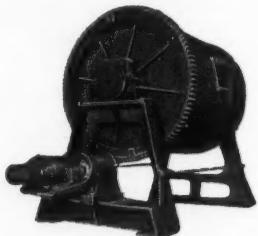
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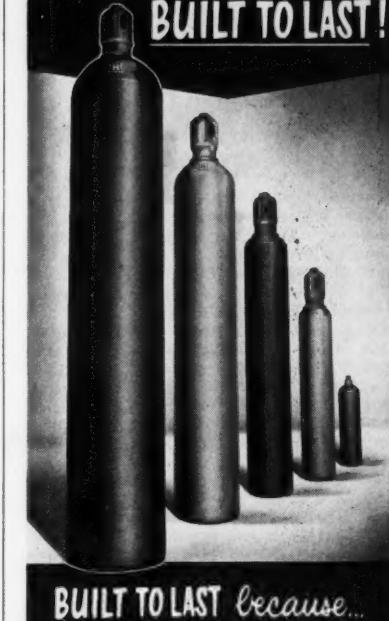
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Enough aldrin to purge 30,000 acres of marauding insects has been shipped by the Shell Chemical Corporation, 50 W. 50th St., New York 20, N.Y. Forty more tons of the insecticide will follow by boat for use in trouble spots from Eritrea in East Africa to India.

20 minute film gives story on geared power

Development and application of internally-geared electrical motors is shown in color and sound movie. Its appeal is targeted at electrical and maintenance engineers who want to know how best to apply geared power. Twenty-minute film explains design and characteristics of motors in geared classifications. (A showing of the film can be arranged by writing to U.S. Electrical Motors Inc., Box 2058, Los Angeles, Calif.)

Starch shoveling now a lost art

Starch shoveling is just about a lost art. When this method of handling was still general practice a good shoveler could earn \$300 a month. Performance did not depend on muscle but knowing how to lift a shovel. Experts took pride in keeping their shovels in condition, maintaining a razor-sharp edge with a spoke shave and shellacking them regularly.

(As reported in the Staley Journal — A. E. Staley Mfg. Co., Decatur, Ill.)

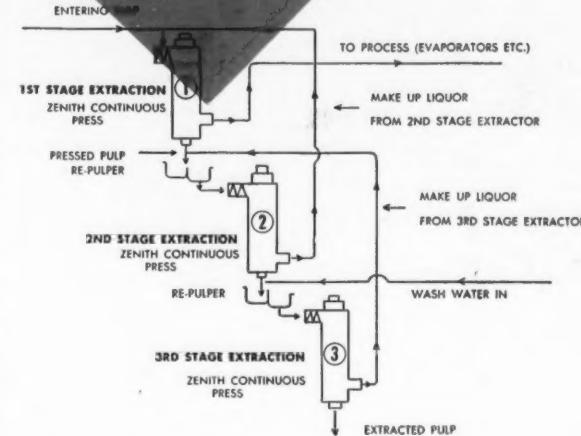
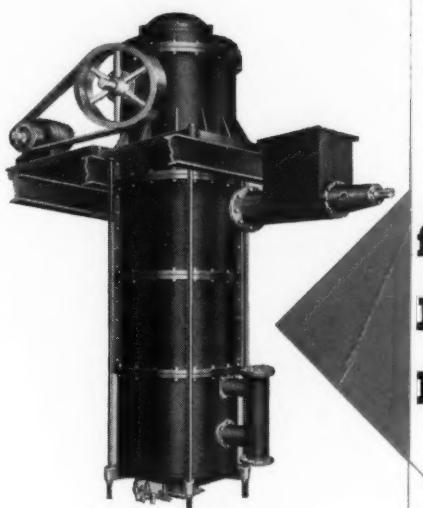
2,000,000 US patents now expired

National Patent Council, Gary, Ind., recently announced that the 2,000,000th patent issued by the US Patent Office had just expired. The invention was the adaptation of a pneumatic tire for rail travel.

Tests conveyor belts in widths to 30 in

The world's largest laboratory conveyor belt testing machine takes production scale belts up to 30 in wide to include widths in general use. Any 30 in wide 80 ft length conveyor belt is put through its paces under up to 200,000 lb tension. The machine makes it possible to duplicate actual conveyor equipment arrangement of head, snub, bend, take-up and tail pulleys, with adjustable angle and elevation of troughing idler pulleys. Recorders trace power, input, stretch and speed. This development follows recent installation of the largest conveyor belt vulcanizing press. (Raybestos-Manhattan, Inc., Manhattan Rubber Div., Passaic, N. J.)

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For 100% automatic, continuous operation. J-C Zenith Press is adaptable to single or multi-stage continuous counter-current extraction.

Zenith's exclusive Floating Cone* holds a constant, automatically controlled pressure against the pressed pulp as it is discharged, resulting in a uniform finished product.

ZENITH PULP PRESS APPLICATIONS:

Multi-stage or single unit extraction and dewatering

Paper Pulp: undiluted black liquor recovery — de-inking — ultra high density bleaching

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Fish Reduction Plants: water and oil from cooked fish wastes and whole fish

Corn Starch Plants: dewatering germ and fiber

Canneries: vegetable and fruit juice extraction, dewatering by-products

Rayon and Cellophane: for the continuous production of alkali cellulose in rayon, cellophane, C.M.C., etc. by the slurry system

* patent applied for

For engineering or performance data, write Dept. D

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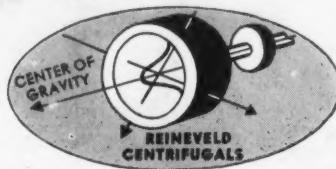
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The formation of this superior filter bed results in lower effluent losses and rapid liquid drainage. Laboratory tests and plant installations have demonstrated that this superior filter bed provides a 50% reduction in spin time required to reach a desired dryness.

Higher Speed

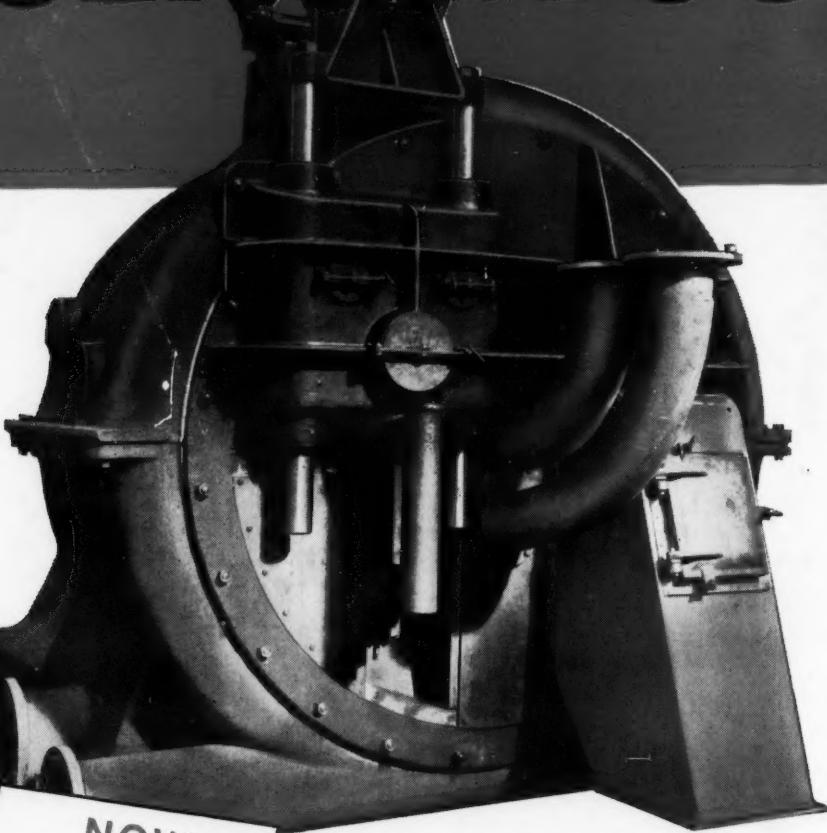
Reineveld's patented design with the main bearing at the center of gravity provides a higher safe operating speed. The maximum operating speed of the Reineveld is limited only by the strength of the drum and *not* by critical speed or shaft behavior.

This exclusive processing feature and Reineveld's outstanding mechanical features combine to increase the quantity and the quality of the final product . . . and Reineveld's mechanical design assures a minimum of maintenance requirements.

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